

## Relazione conclusiva Bando Astrofisica Fondamentale 2024

Roma, 30 gennaio 2025

In data 12.02.2024 con Decreto del Presidente 8/2024 è stata avviata la procedura sperimentale per la valutazione comparativa di proposte di Astrofisica fondamentale da finanziare attraverso canali ordinari e straordinari di finanziamento.

I plafond a finanziamento dei vari canali previsti dalla procedura sperimentale sono indicati nella seguente tabella.

|                      |                          |
|----------------------|--------------------------|
| Large Grants         | Fino a 3.000.000,00 euro |
| Techno Grants        | Fino a 500.000,00 euro   |
| Data Analysis Grants | Fino a 250.000,00 euro   |
| Mini Grants          | Fino a 2.000.000,00 euro |
| Normal GO/GTO Grants | Fino a 1.250.000,00 euro |
| Large GO/GTO grants  | Fino a 500.000,00 euro   |
| Theory Grants        | Fino a 1.250.000,00 euro |
| Terza Missione*      | Fino a 150.000,00 euro   |

*\*La valutazione delle proposte di terza missione è ancora in corso e sarà oggetto di una relazione successiva.*

In data 30.08.2024 con Decreto del Presidente 39/2024 sono state nominate le commissioni per la valutazione delle proposte, una singola commissione per ciascun RSN per la valutazione delle proposte "Mini-Grant" e "Techno Grants" limitatamente a RSN5. Una commissione globale per la valutazione dei "Large Grants", una per "Guest Observer Grants" e per "Data Analysis Grants" ed una per i "Theory Grants". La composizione delle commissioni è indicata nelle seguenti tabelle:

| Commissione Globale per "Large Grants" |                       |
|----------------------------------------|-----------------------|
| Alessandro Marconi (Chair)             | Università di Firenze |
| Giuseppe Consolini                     | INAF.IAPS Roma        |
| Demetrio Magrin                        | INAF-OAPD             |
| Elena Pancino                          | INAF-OAA Arcetri      |
| Alessandro Papitto                     | INAF-OAR Roma         |

| Commissione Globale per "Guest Observer Grants" e "Data Analysis Grants" |                   |
|--------------------------------------------------------------------------|-------------------|
| Valentina Braito (Chair)                                                 | INAF-OAB Milano   |
| Mauro Dolci                                                              | INAF-OA Abruzzo   |
| Andrea Grazian                                                           | INAF-OAPD Padova  |
| Giuseppe Leto                                                            | INAF-OACT Catania |
| Elena Mazzotta Epifani                                                   | INAF-OAR Roma     |

| <b>Commissione Globale per “Theory Grants”</b> |                   |
|------------------------------------------------|-------------------|
| Marcella Marconi (Chair)                       | INAF-OACN Napoli  |
| Gabriella De Lucia                             | INAF-OATS Trieste |
| Ruben Farinelli                                | INAF-OAS Bologna  |
| Davide Grassi                                  | INAF-IAPS Roma    |
| Mario Pasquato                                 | INAF-IASF Milano  |

| <b>Commissione Mini Grants RSN-1 (Galassie e Cosmologia)</b> |                   |
|--------------------------------------------------------------|-------------------|
| Stefano Etori (Chair)                                        | INAF-OAS Bologna  |
| Enrica Iodice                                                | INAF-OACN, Napoli |
| Valentina D’Odorico                                          | INAF-OA Trieste   |

| <b>Commissione Mini Grants RSN-2<br/>(Stelle, Popolazioni stellari, Mezzo Interstellare)</b> |                    |
|----------------------------------------------------------------------------------------------|--------------------|
| Giuliana Fiorentino (Chair)                                                                  | INAF-OAR Roma      |
| Ignazio Francesco Pillitteri                                                                 | INAF-OAPA Palermo  |
| Alberto Sanna                                                                                | INAF-OACA Cagliari |

| <b>Commissione Mini Grants RSN-3<br/>(Sole e Sistema Solare)</b> |                   |
|------------------------------------------------------------------|-------------------|
| Daniele Fulvio (Chair)                                           | INAF-OACT Catania |
| Roberto Susino                                                   | INAF-OATO Torino  |
| Francesca Zambon                                                 | INAF-IAPS Roma    |

| <b>Commissione Mini Grants RSN-4 (Astrofisica Relativistica e Particellare)</b> |                    |
|---------------------------------------------------------------------------------|--------------------|
| Lara Sidoli (Chair)                                                             | INAF-IASF Milano   |
| Maura Pilia                                                                     | INAF-OACA Cagliari |
| Ciro Pinto                                                                      | INAF-IASF Palermo  |

| <b>Commissione Mini Grants RSN-5 (Tecnologie Avanzate e Strumentazione) e Techno Grants</b> |                    |
|---------------------------------------------------------------------------------------------|--------------------|
| Jader Monari (Chair)                                                                        | INAF-IRA Bologna   |
| Gabriele Minervini                                                                          | INAF-Sede Centrale |
| Laura Schreiber                                                                             | INAF-OAS Bologna   |
| Stefania Stefani                                                                            | INAF-IAPS Roma     |
| Fabio Roberto Vitello                                                                       | INAF-OACT Catania  |

Le commissioni hanno avviato i lavori che si sono conclusi con il conferimento dei risultati della valutazione

alla Direzione scientifica entro la data del 22.01.2025. La documentazione trasmessa dalle commissioni è agli atti della procedura.

Entro Venerdì 7 febbraio 2025, i risultati della valutazione di ciascuna delle proposte pervenute saranno accessibili al proponente nel portale [schede.inaf.it](https://schede.inaf.it) dove sono indicati i punteggi attribuiti dalla commissione nelle categorie previste dal bando, più l'eventuale bonus giovani nel solo caso dei Mini-Grants, ed un breve giudizio sintetico indicante i punti di forza ed i punti di debolezza della proposta. Le risultanze espresse nel portale formano parte degli atti della procedura.

Ciascuna commissione ha stilato una graduatoria in ordine decrescente di punteggio per ciascuna delle categorie di proposte esaminate e ha sancito la congruità del finanziamento richiesto suggerendo in taluni casi riduzioni al budget. In alcuni casi, le proposte sono state escluse per non rispetto delle regole del bando.

La Direttrice Scientifica, esaminati gli atti delle Commissioni, valutata la congruità delle indicazioni di esclusione in base alle indicazioni del bando, considerato che per "GO-GTO normal" si trovano tre proposte di ricerca con uguale punteggio nella posizione n.27, e che il budget allocato al bando si esaurisce coprendo il 62% dell'insieme dei tre progetti pari-merito, tenendo conto che è possibile finanziare le tre proposte pari-merito con fondi non ripartiti nel bando "Theory Grants" per il quale il 100% delle proposte è stato finanziato, raccomanda l'erogazione del finanziamento alle proposte ammesse secondo la tabella allegata.

A fini informativi si evidenziano i motivi di esclusione per non rispetto delle regole del bando:

- No. 2 proposte (Techno Grants) per non rispetto regole di cui al punto 5 delle "Informazioni Specifiche".
- No. 14 proposte (Mini Grants) per non rispetto regole di cui al punto 3 delle "Informazioni Specifiche".
- No. 2 proposte (Mini Grants) per non rispetto regole di cui al punto 1 delle "Regole Generali".

L'insieme delle proposte escluse costituisce il 5% del totale delle proposte pervenute (8% delle proposte "Mini Grants").

Si riporta inoltre che la riduzione del budget suggerita dalle commissioni è stata applicata quando le stesse ne abbiano motivato il razionale.

Infine, per il bando "GO/GTO normal", che è di durata annuale, sette proposte hanno fatto richiesta di finanziamento su due anni; in questo caso, per le proposte finanziate, il budget è stato ridotto dell'ammontare richiesto per il secondo anno.

Sono stati riassunti in una tabella (Allegato A) i dati relativi al fattore di pressione per i diversi bandi e alla distribuzione effettiva del finanziamento tra le diverse tipologie di bandi.

#### **La Direttrice Scientifica**

Dott.ssa Isabella Pagano

## LARGE GRANTS

| #                                               | Nome                | Titolo                                                                                                                                                                         | Fondi assegnati  | Punteggio |
|-------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------|
| 1                                               | Paolo Saracco       | SHARP - A near-IR multi-mode spectrograph for MORFEO@ELT                                                                                                                       | 190.000          | 54.3      |
| 2                                               | Alessandra De Rosa  | The Quest for dual and binary massive black holes in the gravitational wave era                                                                                                | 200.000          | 52.7      |
| 3                                               | Federico Lelli      | TRICEPS: luminous and dark matter in massive galaxies at $z=4-5$                                                                                                               | 190.000          | 51.6      |
| 3                                               | Mario Pasquato      | ANIMA (Astronomy with Natively Interpretable MACHine learning)                                                                                                                 | 200.000          | 51.6      |
| 5                                               | Teresa Fornaro      | Laboratory investigations to assess the astrobiological relevance of the Martian samples collected on Mars by the NASA Mars 2020 Perseverance rover for future return to Earth | 190.000          | 51.0      |
| 6                                               | Juan Alcalà         | SKYWALKER: Spectral Key features of Young stellar objects: Wind-Accretion LinKs Explored in the infraRed                                                                       | 190.000          | 50.9      |
| 7                                               | Paola Santini       | UNDUST: UNveiling the Dawn of the Universe with JWST                                                                                                                           | 190.000          | 50.3      |
| 8                                               | Maura Pilia         | COordinated Multiwavelength Exploration of FAsT Radio bursts (COMEFAR)                                                                                                         | 200.000          | 49.9      |
| 9                                               | Silvia Piranomonte  | Envisioning Tomorrow: prospects and challenges for multi-messenger astronomy in the era of Rubin and Einstein Telescope                                                        | 197.000          | 49.5      |
| 10                                              | Gian Israel         | Timing the Ultra-Luminous X-ray Pulsars (TULiP)                                                                                                                                | 166.250          | 48.6      |
| 11                                              | Gaetano Scandariato | Exoplanetary RECOgnition (ExoREC): Exoplanetary signals RECOgnition for the PLATO mission by means of machine learning                                                         | 188.000          | 48.1      |
| 11                                              | Leo Girardi         | Adding incompleteness and crowding errors to the LSST Data Releases                                                                                                            | 189.050          | 48.1      |
| 13                                              | Maria C. De Sanctis | Vesta Space Weather: a synergic approach for the unusual space weather at 4 Vesta                                                                                              | 171.000          | 47.7      |
| 14                                              | Piero Diego         | Planetary Plasma Monitor                                                                                                                                                       | 190.000          | 47.4      |
| 15                                              | Giorgio Lanzuisi    | The DEepest study of LUMinous QSOs in X-ray at $z=2-7$ (DELUX): SMBH feeding and feedback from Cosmic Dawn to Cosmic Noon                                                      | 185.250          | 47.1      |
| <b>Budget stanziato (3.000.000 Euro) TOTALE</b> |                     |                                                                                                                                                                                | <b>2.836.550</b> |           |

## GUEST OBSERVER GRANTS (NORMAL)

| #  | Nome                 | Titolo                                                                                                                                | Fondi assegnati | Punteggi o |
|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|
| 1  | Alessandro Papitto   | Polarized X-rays from an accreting millisecond pulsar: a pathway to the equation of state of neutron stars (PULSE-X)                  | 50.000          | 50.50      |
| 2  | Piergiorgio Casella  | Black Hole Jet Launching Physics with JWST                                                                                            | 50.000          | 50.25      |
| 2  | Giulia Migliori      | X-ray observations of Fast Blue Optical Transients at very late times                                                                 | 49.000          | 50.25      |
| 4  | Sergio Fabiani       | A multi frequency spectro-polarimetric campaign to explore spin and geometry in Low Mass X-ray Binaries                               | 50.000          | 50.00      |
| 5  | Linda Podio          | ICES: Tracking the history of ices from the cradles of planets to comets                                                              | 50.000          | 49.00      |
| 6  | Nicola La Palombara  | The binary pulsar 4U 0728-25 in the context of the persistent BeXRBs                                                                  | 5.000           | 48.75      |
| 7  | Davide Perna         | VST Asteroid Survey                                                                                                                   | 50.000          | 48.50      |
| 8  | Sandro Mereghetti    | Toward Neutron Stars unification                                                                                                      | 48.000          | 48.25      |
| 9  | Monica Orienti       | Active or relics? The life cycle of relativistic jets in active galactic nuclei                                                       | 50.000          | 48.00      |
| 9  | Mariachiara Rossetti | Extended Radio Emission in Galaxy Clusters at deep focus with MeerKAT                                                                 | 46.000          | 48.00      |
| 11 | Fabrizio Bocchino    | Pre-supernova outbursts in Galactic Red Supergiants: predicting the next Galactic SN event                                            | 50.000          | 47.80      |
| 12 | Giustina Vietri      | LBT investigation of Winds & OutflowWs in luminous QSOs at cosmic noon (LBT-WOW)                                                      | 50.000          | 47.75      |
| 12 | Michele Cantiello    | Advancing Cosmological Distance Measurements through JWST: Stellar Population Distance Indicators - TRGB and SBF Setting the Standard | 23.000          | 47.75      |
| 14 | Francesca Panessa    | RADIO EMISSION AND WINDS FEEDBACK IN QUASARS                                                                                          | 49.000          | 47.50      |
| 15 | Alberto Cappi        | Towards anchoring the mass scale of galaxy clusters with galaxy kinematics                                                            | 50.000          | 47.20      |
| 15 | Giovanni Cresci      | A JWST/MIRI MIRACLE: Mid-IR Activity of Circumnuclear Line Emission                                                                   | 50.000          | 47.20      |
| 15 | Daniela Carollo      | Search for chemical fingerprints of the FIRST STARS in extremely metal poor CEMP-no stars                                             | 50.000          | 47.20      |
| 18 | Andrea Giannetti     | Closing the Circle: The First High-Resolution Panoramic View of the Milky Way Disk                                                    | 50.000          | 46.60      |
| 18 | Simona Paiano        | Probing the nature of extragalactic $\gamma$ -ray sources.                                                                            | 50.000          | 46.60      |

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|-----------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------|------------------|-------|
| 20                                                                          | Antonio Stamerra   | Discovering the New TeV Frontier of Gravitational Wave Counterparts through Follow-up Observations with the MAGIC Telescopes | 50.000           | 46.50 |
| 21                                                                          | Leslie Hunt        | The JWST high-resolution view of low-metallicity dwarf starbursts                                                            | 50.000           | 46.40 |
| 22                                                                          | Ignazio Pillitteri | X-ray stellar cycles and their influence on exoplanets                                                                       | 15.000           | 45.00 |
| 23                                                                          | Maria Bernardini   | Betting on Electromagnetic Transients in X-rays during O4b (BETs X O4b)                                                      | 50.000           | 44.75 |
| 24                                                                          | Marco Castellano   | Reveiling the nature of bright galaxies at cosmic dawn with deep JWST spectroscopy                                           | 50.000           | 43.67 |
| 25                                                                          | Mariateresa Focchi | INTEGRAL view of the Galactic Plane                                                                                          | 28.000           | 43.60 |
| 26                                                                          | Eros Vanzella      | Mapping Star Cluster Feedback in a Galaxy 450 Myr after the Big Bang                                                         | 48.000           | 43.40 |
| 27                                                                          | Fabrizio Fiore     | Quasar host galaxies at Cosmic dawn                                                                                          | 44.500           | 42.75 |
| 27                                                                          | Serena Benatti     | ArMS: the Ariel Masses Survey Large Program at the TNG                                                                       | 50.000           | 42.75 |
| 27                                                                          | Ivan Delvecchio    | U-JOIN: Unveiling the Jet-Outflow Interplay in Normal galaxies                                                               | 48.000           | 42.75 |
| <b>Budget stanziato (iniziale: 1.250.000; finale 1.303.500 Euro) TOTALE</b> |                    |                                                                                                                              | <b>1.303.500</b> |       |

**DIREZIONE SCIENTIFICA**

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| <b>GUEST OBSERVER GRANTS (LARGE)</b>          |                   |                                                                                 |                 |           |
|-----------------------------------------------|-------------------|---------------------------------------------------------------------------------|-----------------|-----------|
| #                                             | Nome              | Titolo                                                                          | Fondi assegnati | Punteggio |
| 1                                             | Simone Antonucci  | GO SHARK! A GTO grant for SHARK-VIS at LBT                                      | 100.000         | 51.125    |
| 2                                             | Isabella Prandoni | MeerKAT and Euclid Team up: Exploring the galaxy-halo connection at cosmic noon | 100.000         | 49.875    |
| 3                                             | Marco Mignoli     | SQUEEzE: the Study of the QUasar Environment at Early-z Epoch                   | 100.000         | 49.000    |
| 4                                             | Andrea Melandri   | Exploitation of optical and near-infrared follow-up data of Gamma-ray Bursts    | 100.000         | 48.750    |
| 5                                             | Francesco Borsa   | Strengthening pylons for BRIDGES                                                | 100.000         | 48.250    |
| <b>Budget stanziato (500.000 Euro) TOTALE</b> |                   |                                                                                 | <b>500.000</b>  |           |

**DIREZIONE SCIENTIFICA**

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| <b>DATA ANALYSIS GRANTS</b>                   |                       |                                                                                                    |                 |           |
|-----------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------|-----------------|-----------|
| #                                             | Nome                  | Titolo                                                                                             | Fondi assegnati | Punteggio |
| 1                                             | Francesca Zambon      | Spectral Units Mineralogy tOol (SUMO)                                                              | 30.000          | 48.40     |
| 2                                             | Emanuele D'Alessandro | 3D globular cluster core kinematics at sub-arcsec scale: the ultimate quest for IMBHs              | 36.000          | 48.20     |
| 3                                             | Alessandro Marconi    | Accurate measurements of metallicity in galaxies with a new approach to photoionization modelling. | 50.000          | 47.40     |
| 4                                             | Beatrice Bucciarelli  | New Astro-Photometric Calibration of Historical Photographic Observations                          | 31.000          | 47.35     |
| 5                                             | Maria E. Palumbo      | Database of laboratory spectra of ices for the analysis of JWST data                               | 48.000          | 46.90     |
| 6                                             | Paolo D'Avanzo        | Probing into the Multi-Messenger Universe with Short Gamma-Ray Bursts                              | 33.000          | 46.75     |
| <b>Budget stanziato (250.000 Euro) TOTALE</b> |                       |                                                                                                    | <b>228.000</b>  |           |



## THEORY GRANTS

| #                                                                        | Nome                   | Titolo                                                                                                                                            | Fondi assegnati | Punteggio |
|--------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 1                                                                        | Massimo Meneghetti     | Probing Dark Matter and Galaxy Formation in Galaxy Clusters through Strong Gravitational Lensing                                                  | 50.000          | 288       |
| 2                                                                        | Olga Cucciati          | SMILE - Simulating Matter Interactions in the Lineage of Environments                                                                             | 50.000          | 282       |
| 3                                                                        | Giovanni Morlino       | Star Clusters As cosmic Ray FACToriEs II (SCARFACE 2)                                                                                             | 49.600          | 271       |
| 4                                                                        | Franco Vazza           | A new numerical view of the cycle of relativistic electrons in clusters of galaxies                                                               | 50.000          | 267       |
| 5                                                                        | Lorenzo Pino           | 2DISCHEM                                                                                                                                          | 50.000          | 266       |
| 5                                                                        | Paolo Ventura          | AGB stars through the JWST lens: tools for dust production and SFH studies                                                                        | 35.000          | 266       |
| 7                                                                        | Marco Limongi          | Massive stars as cosmic clocks: shaping the evolution of infant galaxies                                                                          | 50.000          | 265       |
| 8                                                                        | Francesco Calura       | Magnetohydrodynamic Simulations of Galactic Molecular Clouds: Resolving Stellar Birth and Proto-planetary Discs with an Enhanced Chemical Network | 50.000          | 263       |
| 9                                                                        | Fabrizio Tavecchio     | Understanding polarization in blazars: an MHD-PIC study of jet recollimation shocks (POLARSHOCK)                                                  | 50.000          | 259       |
| 10                                                                       | Stefano Etori          | Constraining the non-thermal pressure in galaxy clusters with high-resolution X-ray spectroscopy                                                  | 50.000          | 258       |
| 11                                                                       | Michelangelo Formisano | Thermophysical modeling of Permanently Shadowed Regions (PSRs) on Moon and Mercury                                                                | 50.000          | 257       |
| 12                                                                       | Stefano Borgani        | Black Hole Dynamics and Galaxy Formation from Cosmological Simulations                                                                            | 50.000          | 254       |
| 13                                                                       | Emiliano Merlin        | FORECASTing the Universe as observed by ELT                                                                                                       | 40.000          | 246       |
| 14                                                                       | Daniele Galli          | PIPID: Probing Ionisation Processes In Discs                                                                                                      | 50.000          | 230       |
| 15                                                                       | Lorenzo Lovisari       | Fe-L complex in galaxy groups: gift or curse?                                                                                                     | 48.000          | 226       |
| 16                                                                       | Alessandra Migliorini  | FLU-OHM: Fluorescence OH/OD Model for Cometary Observations applied to CUBES/VLT                                                                  | 47.000          | 226       |
| 17                                                                       | Alessandro Bemporad    | Simulations of Sun-to- Earth Propagation of Solar Eruptions (SSEPSE-2)                                                                            | 50.000          | 218       |
| 18                                                                       | Alexandra Parmentier   | Modeling of the Impact of ionizing Radiation bursts on the Earth's Top-side Ionosphere (MIRTI)                                                    | 50.000          | 206       |
| <b>Budget stanziato (iniziale: 1.250.000; finale 1196.5 Euro) TOTALE</b> |                        |                                                                                                                                                   | <b>869.600</b>  |           |

## THECNO GRANTS

| #                                                  | Nome              | Titolo                                                                                                      | Fondi assegnati | Punteggio |
|----------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 1                                                  | Filippo Ambrosino | Chasing the optical counterpart in FRBs and Magnetars with SiFAP2@TNG and SiFAP-SoFT@Cassini                | 100.000         | 55.20     |
| 2                                                  | Andrea Melis      | Italian Single-dish radio telescope enhancement for studying Transients And GRAvitational Waves (INSTAGRAW) | 100.000         | 52.75     |
| 3                                                  | Andrea Cicchetti  | Mars Advanced GPR for Helicopter Ice Sounding (MAGHIS)                                                      | 97.000          | 52.33     |
| 4                                                  | Marco Landoni     | Artificial Intelligence Assisted Alignment and Integration (A3I)                                            | 100.000         | 51.50     |
| 5                                                  | Michela Uslenghi  | CLUMP - Compact, Low power, Ultraviolet Microchannel plate Photon counting detector                         | 100.000         | 51.00     |
| <b>Budget stanziato (500.000 Euro)      TOTALE</b> |                   |                                                                                                             | <b>497.000</b>  |           |

## RSN1 MINI-GRANTS

| #  | Nome                  | Titolo                                                                                                                            | Fondi assegnati | Punteggio |
|----|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 1  | Isabella Carucci      | Radio intensity mapping: Modelling and Analysis of its Statistics (RadioMAS)                                                      | 20.000          | 61.0      |
| 2  | Elena Bertola         | Bridging space- and ground-based efforts with JWST and ERIS to resolve AGN-driven ionized winds up to the onset of cosmic dawn    | 20.000          | 60.0      |
| 3  | Vittorio Ghirardini   | Probing gravity using galaxy clusters                                                                                             | 20.000          | 59.5      |
| 4  | Mario Llerena Ona     | Galaxies in the epoch of Reionization and their analogs at lower redshift                                                         | 16.000          | 58.7      |
| 5  | Akke Viitanen         | AGILE: AGN In the LSST Era v2.0                                                                                                   | 15.000          | 57.7      |
| 6  | Peter Watson          | Spatially-Resolved Near-IR Emission of Intermediate-Redshift Jellyfish Galaxies                                                   | 20.000          | 57.0      |
| 7  | Gabriele Riccio       | Extragalactic Distances from Surface Brightness Fluctuations: a precise and accurate methodology for the next generation surveys. | 20.000          | 56.7      |
| 8  | Lorenzo Piga          | Accelerating cosmological simulations with deep LEarning techniqueS (ALES)                                                        | 20.000          | 56.3      |
| 9  | Chiara Stuardi        | Exploring intergalactic magnetic fields to unveil the cosmic web                                                                  | 18.000          | 55.7      |
| 10 | Evangelos Paspaliaris | Dust emission and optical extinction as gas tracers in star forming galaxies                                                      | 18.000          | 55.3      |
| 11 | Francesco Salvestrini | ECHOS: Early Coevolution of Host-galaxies and SMBHs                                                                               | 20.000          | 54.0      |
| 12 | Livia Vallini         | RISE: Resolving the ISM and Star formation in the Epoch of Reionization                                                           | 19.000          | 53.5      |
| 13 | Daniela Vergani       | VITAL (Voids Interpretation Through mAchine Learning approach)                                                                    | 19.300          | 53.0      |
| 13 | Viviana Casasola      | DustPedia meets Metal-THINGS: Dust-METAL                                                                                          | 20.000          | 53.0      |
| 15 | Marcella Longhetti    | 4MOST- StePS: a Stellar Population Survey using 4MOST@VISTA                                                                       | 12.000          | 52.7      |
| 16 | Roberto Gilli         | The hidden growth of SMBHs from cosmic dawn to cosmic noon                                                                        | 16.000          | 51.5      |
| 16 | Gianluca Castignani   | Galaxy Evolution in Distant Clusters (GEDiC)                                                                                      | 6.000           | 51.5      |
| 15 | Fabio Fontanot        | The effect of a variable IMF on Galaxy Evolution and Assembly: from the local to the high-z Universe.                             | 17.000          | 51.5      |
| 19 | Tiziana Venturi       | HI-GalESS - Tracing Galaxy Evolution in the Shapley Supercluster with neutral hydrogen                                            | 20.000          | 51.0      |
| 19 | Antonello Calabro     | Probing the physical properties of galaxies in the early Universe with JWST spectroscopic observations                            | 18.000          | 51.0      |
| 21 | Anna Feltre           | The pc-scale view of HII regions in M33                                                                                           | 20.000          | 50.5      |
| 22 | Filippo Maccagni      | MAGNHIFFIC - MeerKAT AGN HI Feeding & Feedback Investigation Close-by                                                             | 20.000          | 50.0      |
| 22 | Roberto Decarli       | The interstellar medium at high redshift                                                                                          | 17.000          | 50.0      |

|                                               |                 |                                                            |                |      |
|-----------------------------------------------|-----------------|------------------------------------------------------------|----------------|------|
| 24                                            | Davide Sciotti  | Cosmological parameters' uncertainties in the Stage IV Era | 16.000         | 49.0 |
| 25                                            | Laura Bisigello | Super-MIGHTEE and SPRITZ: paving the road to SKA           | 15.000         | 48.7 |
| <b>Budget stanziato (445.000 Euro) TOTALE</b> |                 |                                                            | <b>442.300</b> |      |

## RSN2 MINI-GRANTS

| #  | Nome                 | Titolo                                                                                                                                      | Fondi assegnati | Punteggio |
|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 1  | Cristobal Bordiu     | Multiwavelength study of a hidden population of radio shells discovered by MeerKAT                                                          | 17.000          | 58.50     |
| 2  | Riccardo Spinelli    | PROBING HELIUM DEPLETION IN OUTFLOWING EXOPLANET ATMOSPHERES                                                                                | 19.000          | 57.75     |
| 3  | Elenia Pacetti       | GRoGU: GRain Growth Unit for JADE                                                                                                           | 20.000          | 56.83     |
| 4  | Domenico Barbato     | A multi-technique reassessment of exoplanetary demographics                                                                                 | 20.000          | 56.17     |
| 5  | Giulia Piccinini     | Planetary Systems Architecture with Jovian planets (JASP)                                                                                   | 20.000          | 55.75     |
| 6  | Victor Almendrosabad | Spectroscopy of Young Brown Dwarfs                                                                                                          | 18.000          | 55.50     |
| 7  | Vikash Singh         | EPSECA project, development of an Exo-Planetary mining and characterization algorithm.                                                      | 19.000          | 54.67     |
| 8  | Chiara Mininni       | ZODYAC: ZOoming in on theDYnAmic of Cores                                                                                                   | 20.000          | 53.17     |
| 9  | Olga Bayandina       | Study of episodic accretion in massive star formation traced by high-frequency masers with the tri-band receivers of the Italian telescopes | 17.000          | 53.00     |
| 10 | Thomas Nony          | MoleculAr ComponEnts of WINds from protoplanetary Disks Unveiled (MACE_WINDU)                                                               | 20.000          | 52.83     |
| 11 | Sylvain Breton       | How the magnetism of young solar-type stars shape their future: Oscillations, dynamo and interactions                                       | 20.000          | 52.50     |
| 12 | Chi Nguyen           | GALoMS - Galactic Archaeology for Low Mass Stars                                                                                            | 20.000          | 50.33     |
| 13 | Eloisa Poggio        | Mapping Waves in the Milky Way                                                                                                              | 20.000          | 48.50     |
| 14 | Camilla Danielski    | BASC - Building the Ariel mission Stellar Catalogue: a public homogeneous catalogue for the whole stellar and exoplanet community           | 20.000          | 47.17     |
| 15 | Francesca Annibali   | The hierarchical assembly of nearby dwarf galaxies with Euclid                                                                              | 19.000          | 46.33     |
| 16 | Jose Schiappacasse   | Globular cluster Exploration with chemical evolution ModelS (GEMS)                                                                          | 20.000          | 46.17     |
| 17 | Valentina D'Orazi    | M dwarfs in open clusters: Unlikely heroes in the Galactic Saga of fluorine (MUGS)                                                          | 17.000          | 46.00     |
| 17 | Kazi Rygl            | Toward tri-band maser observations of high-mass star-forming regions                                                                        | 20.000          | 46.00     |
| 19 | Vittorio Braga       | Immediate exploitation of LSST: RR Lyrae as structure probes of Local Group galaxies                                                        | 20.000          | 45.50     |
| 20 | Teresa Giannini      | GLORIOUS : Gaia science aLerts tO find eRuptive yOUNg stellar objectS                                                                       | 20.000          | 45.25     |
| 21 | Marco Padovani       | ExploriNg low-Energy cosmic Rays throuGh theoretical InvestigAtions at INAF (ENERGIA)                                                       | 20.000          | 45.00     |

|                                                    |                   |                                                                                                                                 |                |       |
|----------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------|-------|
| 22                                                 | Davide Fedele     | Seeing the unseen with SKA, how dust grains grow up to be planets (DiSKA)                                                       | 20.000         | 44.83 |
| 23                                                 | Eleonora Loffredo | Advanced Platform for Processing Heavy Element Libraries (APPHEAL)                                                              | 20.000         | 44.67 |
| 24                                                 | Emanuele Spitoni  | LEGARE - Linking the chemical Evolution of Galactic discs Across diverse scales: from the thin disc to the nuclear stellar disc | 20.000         | 44.50 |
| <b>Budget stanziato (474.000 Euro) .... TOTALE</b> |                   |                                                                                                                                 | <b>466.000</b> |       |

## RSN3 MINI-GRANTS

| #                                             | Nome                | Titolo                                                                                                                                  | Fondi assegnati | Punteggio |
|-----------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 1                                             | Francesco Marchetti | Investigating coronal holes' shapes and their relationship with high-speed solar wind streams via topological data analysis             | 20.000          | 61.50     |
| 2                                             | Silvia Bertoli      | Multi-approaches analysis on Martian and terrestrial rock glaciers: paleoclimatic implications and evaluation of permafrost behaviour   | 20.000          | 61.00     |
| 3                                             | Giovanni Munaretto  | Mars' recent Wetlands : Investigating the Red Planet Habitability and Brine Stability during the last 20 Myrs                           | 17.000          | 60.50     |
| 4                                             | Filippo Tusberti    | Unveiling the Secrets of NEAs and Their Parent Bodies: A Surface Lithological Analysis                                                  | 20.000          | 57.50     |
| 5                                             | Ines Delfino        | ASTROcyte nuclei response to ionizing RADiation of SpAce interest observed through changes in their biochemical and mechanical FEatures | 20.000          | 56.50     |
| 6                                             | Martina Moroni      | MERcury's Sodium eXosphere (MESEX): comparison of MESSENGER/MASCS data and THEMIS ground based observations                             | 20.000          | 55.50     |
| 7                                             | Antonio Sepe        | Hermean Landslides (HeLa): a global survey and classification of Mercury's mass-wasting processes                                       | 20.000          | 54.00     |
| 8                                             | Emiliano D'Aversa   | PLUMES-Planetary fractures Lagrangian simUlations for Multi-component EmissionS                                                         | 20.000          | 53.00     |
| 9                                             | Melissa Mirino      | Characterization of Ganymede cryovolcanic Paterae                                                                                       | 20.000          | 51.50     |
| 10                                            | Natalia Vergara     | Global classification of Mercury's surface through unsupervised learning techniques to aid the reconstruction of geological maps.       | 20.000          | 50.50     |
| 11                                            | Pietro Scarica      | A comparative analysis of Venus and Jupiter polar cyclones                                                                              | 18.300          | 50.00     |
| 12                                            | Manuela Lippi       | ProDisCo 2.0: statistical comparison of molecular abundances in comets and proto-planetary disks                                        | 20.000          | 49.50     |
| 13                                            | Pamela Cambianica   | Exploring the influence of regolith on the thermal environment and appearance of Mercury's polar craters                                | 18.500          | 49.00     |
| 14                                            | Cristina Re         | PLanetary image Simulator (PLAS)                                                                                                        | 18.000          | 48.50     |
| <b>Budget stanziato (284.000 Euro) TOTALE</b> |                     |                                                                                                                                         | <b>271.800</b>  |           |

## RSN4 MINI-GRANTS

| #                                             | Nome                | Titolo                                                                                                            | Fondi assegnati | Punteggio |
|-----------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 1                                             | Antonio Tutone      | DREAM-XS: Deep Recurrent Analysis and Modeling for X-ray Spectroscopy                                             | 20.000          | 62.00     |
| 2                                             | Andrea Pavan        | End2End - Linking short gamma-ray bursts to coalescing binary neutron stars via relativistic jet simulations      | 20.000          | 60.67     |
| 3                                             | Elise Egron         | Osservazioni radio single-dish e VLBI di sistemi binari X nel contesto di osservazioni simultanee multi-frequenza | 17.500          | 58.00     |
| 4                                             | Aishwarya Thakur    | Mobility for GRALE (Gamma-Ray burst Astrophysics with LSST and Einstein Probe)                                    | 20.000          | 57.33     |
| 5                                             | Roberta Amato       | Geometry and Nature Of Super-Eddington Sources (GNOSES)                                                           | 20.000          | 56.50     |
| 6                                             | Silvia Crestan      | High energy neutrinos and photons from the PeVatron candidate LHAASO J1908+0621                                   | 10.000          | 56.00     |
| 7                                             | Cristiana Spingola  | Preparing for the SKA-VLBI and ngVLA-LONG using strong gravitational lensing                                      | 17.000          | 56.00     |
| 8                                             | Rocco Lico          | Investigate the nature of supermassive binary black holes at the highest spatial resolution                       | 16.000          | 55.67     |
| 9                                             | Michela Rigoselli   | Search for hidden neutron stars powering TeV sources                                                              | 14.000          | 54.50     |
| 10                                            | Martina Cardillo    | PERLA: Pevatron Emission Relayed LAnguages                                                                        | 20.000          | 53.66     |
| 11                                            | Maria Baglio        | X-BOOM - X-ray Binary Outbursts: an Optical Monitoring                                                            | 20.000          | 53.33     |
| 12                                            | Emanuele Greco      | Investigating magnetic turbulence in young Supernova Remnants through X-ray observations                          | 20.000          | 53.33     |
| 13                                            | Nicola Locatelli    | Tomography of the hot gas phase of the Milky Way                                                                  | 20.000          | 53.33     |
| 14                                            | Stefano Giarratana  | RATTS: RADio to TeV Transient Sources                                                                             | 20.000          | 52.66     |
| 15                                            | Marcello Giroletti  | VLBI towards the SKA era                                                                                          | 20.000          | 52.66     |
| 16                                            | Guillermo Rodriguez | EXTraS 2.0 - Search for pulsations                                                                                | 20.000          | 51.00     |
| 17                                            | Andrea Rossi        | The GRB-KN connection                                                                                             | 16.000          | 50.66     |
| <b>Budget stanziato (322.000 Euro) TOTALE</b> |                     |                                                                                                                   | <b>310.500</b>  |           |



## RSN5 MINI-GRANTS

| #  | Nome                | Titolo                                                                                                                                                                | Fondi assegnati | Punteggio |
|----|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| 1  | Laura Asquini       | A modular scheduler for ground-based observations                                                                                                                     | 20.000          | 63.00     |
| 2  | Serena Farina       | Wavelength-Shifted Enhanced UV Sensor (WAVE-SENSE)                                                                                                                    | 20.000          | 62.80     |
| 3  | John Rankin         | XXL-WIDE: X-ray eXpanded Lobster Wide field optical Designs for Einstein telescope follow-up                                                                          | 20.000          | 62.20     |
| 4  | Luca Castaldini     | Study and develop an edge computing system FPGA based to acquire and analyze gamma-ray events from scintillator detectors with SiPM using machine learning techniques | 20.000          | 62.00     |
| 5  | Giuseppe Dilillo    | A machine learning framework for reconstructing astrophysical images from coded mask instruments                                                                      | 20.000          | 60.00     |
| 6  | Raffaele Pascale    | RAMSES goes GPU: GPU porting for advanced hydrodynamic simulations of galaxy evolution                                                                                | 19.000          | 59.25     |
| 7  | Matteo D'Ambrogio   | Thermomechanical and vibrational study. From simulation to reality                                                                                                    | 20.000          | 59.20     |
| 7  | Manuela Arno        | High resolution VPHGs for next generation MOS optical spectrographs                                                                                                   | 20.000          | 59.20     |
| 9  | Fernando Caro       | Multi-wavelength reprocessing of distant sources to identify blended galaxies and improve high-redshift science galaxy catalogs                                       | 20.000          | 56.80     |
| 10 | Paolo Nogara        | Front-End Electronics Emulator (Emu-FEE)                                                                                                                              | 20.000          | 56.40     |
| 11 | Edoardo Redaelli    | Metal Additive Manufacturing for Optomechanics and Alignment Tool (MAMOAT)                                                                                            | 20.000          | 56.25     |
| 12 | Kamal Sant          | Calibration of Scientific CMOS sensors for the Interferometric Bidimensional Spectrometer 2.0 (IBIS2.0)                                                               | 20.000          | 56.00     |
| 13 | Pietro Ferraiuolo   | BINCAT - Binary Catalog for AO Systems Performance Evaluation                                                                                                         | 20.000          | 55.80     |
| 14 | Claudio Gheller     | Cosmological Radio Sources Detection and Classification through Visual Transformer based Self Supervised Representation Methods                                       | 20.000          | 54.00     |
| 15 | Vincenzo Cotroneo   | Innovative coatings for high-precision thermal forming                                                                                                                | 20.000          | 53.50     |
| 16 | Antonino La Barbera | Cosmic Ray UNveiling with Cherenkov telescopes (CRUNCH) - Artificial intelligence methods to study cosmic rays with ASTRI                                             | 20.000          | 53.40     |
| 16 | Matteo Menessini    | SHINE - Space telescope High-precision Ion-beam Nm polishing Equipment                                                                                                | 20.000          | 53.40     |
| 18 | Giuliano Taffoni    | Numerical Chaos in Cosmological Simulations                                                                                                                           | 16.000          | 53.00     |

|                                               |                 |                                                                                    |                |       |
|-----------------------------------------------|-----------------|------------------------------------------------------------------------------------|----------------|-------|
| 19                                            | Daniele Spiga   | AGORA - Alternative to Gold as Release Agent for small Nickel Electroformed Optics | 20.000         | 51.50 |
| 20                                            | Giuseppe Romeo  | Augmented Aqueye+: adding an infrared channel to the fast photon counter Aqueye+   | 20.000         | 51.25 |
| 21                                            | Luca Tornatore  | EE-HPC                                                                             | 19.000         | 50.50 |
| 22                                            | Ricardo Sanchez | MACHETE: Monitoring the Alignment of CHErenkov Telescopes                          | 20.000         | 49.60 |
| 23                                            | Gabriele Vecchi | Development of astronomical mirrors by 3D printing of silica glass                 | 20.000         | 49.50 |
| <b>Budget stanziato (474.000 Euro) TOTALE</b> |                 |                                                                                    | <b>454.000</b> |       |

## **DIREZIONE SCIENTIFICA**

### *Allegato 1*

| Tipologia           | Progetti Presentati | Max per progetto [Keuro] | Durata Progetto (anni) | Finanziamento Disponibile [Keuro] (*) | N.ro Progetti Finanziati | Frazione dei progetti finanziati | Fondi assegnati [Keuro] | Frazione dei fondi assegnati (rispetto alla richiesta integrale) | Avanzo [Keuro] | Percentuale avanzo |
|---------------------|---------------------|--------------------------|------------------------|---------------------------------------|--------------------------|----------------------------------|-------------------------|------------------------------------------------------------------|----------------|--------------------|
| Large Grants        | 53                  | 200                      | 2                      | 3000                                  | 15                       | 28%                              | 2836.6                  | 28%                                                              | 163.5          | 5%                 |
| GO/GTO Normal       | 37                  | 50                       | 1                      | 1303.5                                | 29                       | 78%                              | 1303.5                  | 77%                                                              | 0.0            | 0%                 |
| GO/GTO Large        | 13                  | 100                      | <=2                    | 500                                   | 5                        | 38%                              | 500.0                   | 39%                                                              | 0.0            | 0%                 |
| Data Analysis       | 15                  | 50                       | <=2                    | 250                                   | 6                        | 40%                              | 228.0                   | 38%                                                              | 22.0           | 9%                 |
| Theory              | 18                  | 50                       | <=2                    | 1196.5                                | 18                       | 100%                             | 869.6                   | 100%                                                             | 326.9          | 27%                |
| Techno              | 17                  | 100                      | <=2                    | 500                                   | 5                        | 29%                              | 497.0                   | 30%                                                              | 3.0            | 1%                 |
| Mini Grants RSN1    | 47                  | 20                       | 2                      | 445                                   | 25                       | 48%                              | 442.3                   | 54%                                                              | 2.7            | 1%                 |
| Mini Grants RSN2    | 50                  | 20                       | 2                      | 474                                   | 24                       | 48%                              | 466.0                   | 49%                                                              | 8.0            | 2%                 |
| Mini Grants RSN3    | 30                  | 20                       | 2                      | 284                                   | 14                       | 50%                              | 271.8                   | 47%                                                              | 12.2           | 4%                 |
| Mini Grants RSN4    | 34                  | 20                       | 2                      | 322                                   | 17                       | 49%                              | 310.5                   | 49%                                                              | 11.5           | 4%                 |
| Mini Grants RSN5    | 47                  | 20                       | 2                      | 474                                   | 23                       | 53%                              | 454.0                   | 46%                                                              | 20.0           | 4%                 |
| <b>Totale</b>       | <b>361</b>          |                          |                        | <b>8749</b>                           | <b>181</b>               | <b>51%</b>                       | <b>8179.3</b>           | <b>51%</b>                                                       | <b>569.8</b>   | <b>5%</b>          |
| di cui mini-grant's | 208                 |                          |                        | 1999                                  | 103                      | 50%                              | 1944.6                  | 49%                                                              | 54.4           | 3%                 |

(\*) Il finanziamento originariamente previsto per il bando "GO/GTO normal" ammonta a 1.250.000 Euro; esso si esaurisce coprendo il 62% dell'insieme di tre progetti pari-merito in posizione 27. Sono stati quindi trasferiti 53,5 Meuro dal finanziamento previsto per il bando "Theory Grants" per il quale il 100% delle proposte è stato comunque finanziato.