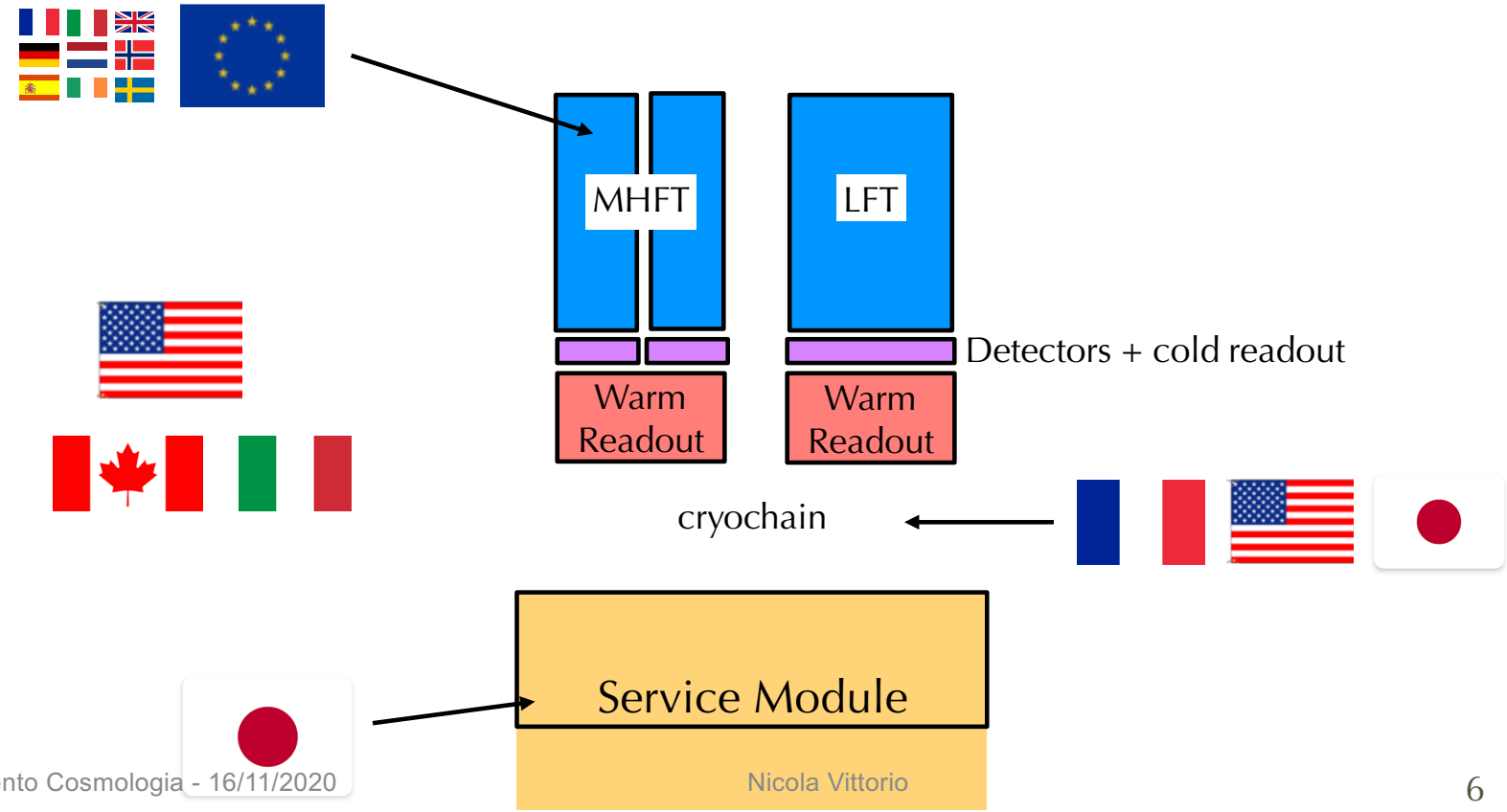
# LiteBIRD @ 16/11/2020

- An International, European and Italian overview

# LiteBIRD: an international view

- ***Selected as the next JAXA's L-class mission***
  - Expected launch in 2029 with JAXA H3 rocket
- ***It is the "ONLY" CMB space mission of the 20's***
  - Observations for 3 years (baseline) from L2
  - 15 frequerncy bands from 34 to 448 GHz
  - Angular resolution: from 70 down to 20 arcmin
- ***Mission goal***
  - $\delta r < 0.001$ (for $r=0$) with CMB B-mode observation

# LiteBIRD: an international view

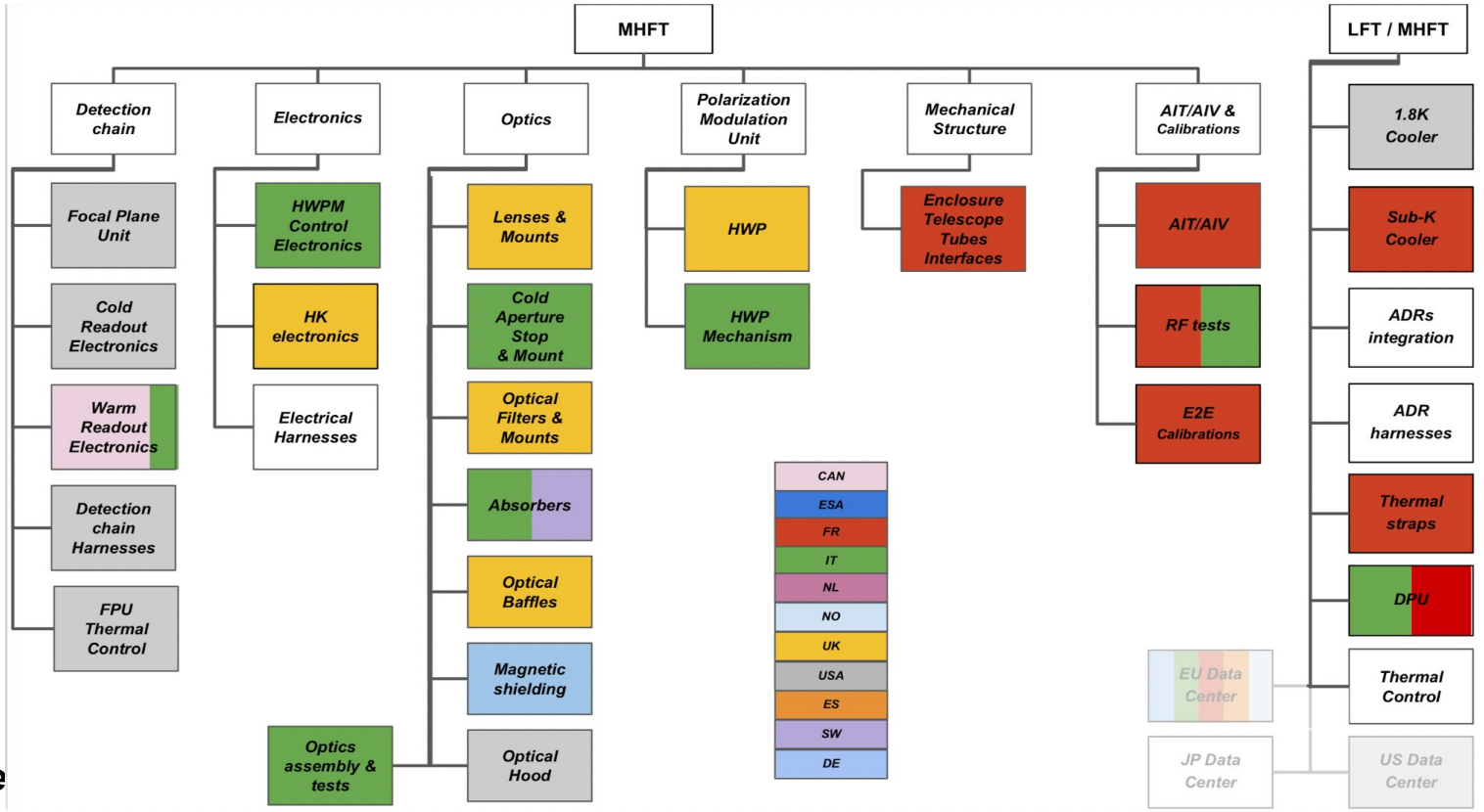


# LiteBIRD: an international view

- ***JSGs & Other subgroups***
  - **Design and interfaces of the payload module**: B. Mot (FR), Y. Sekimoto (JP), K. Thomson (US)
  - **Foreground Cleaning:** C. Baccigalupi (IT), N. Katayama (JP), R. Flauger (US) (+ E. Komatsu)
  - **Mitigation of systematic uncertainties:** H. Ishino (JP), G. Patanchon (FR), J. Borril (US)
  - **Calibration tools and strategies:** T. Matsumura (JP), K. Arnold (US), S. Henrot-Versille (FR)
  - **Cross-JSG** (C. Baccigalupi - IT)
  - **Readout** (M. Dobbs -CA , G. Signorelli - IT , M. Tsujimoto - JP , D. Rambaud - FR)
  - **Data managment** (P. Natoli - IT , M. Tristram - FR)
  - **Simulation team** (M. Tomasi - IT)
  - **MHFT telescope** (P. de Bernardis -IT , G. Pisano - UK , B. Maffei - FR)
  - **IMO** (S. Henrot-Versille - FR)

# LiteBIRD: an european view

- ***The "European collaboration" consists of 9 partners:***
  - France, Italy, United Kingdom, Germany, Spain, Sweden, Norway, Ireland, the Netherlands,
  - more than 100 scientist
- ***The European Steering Committee***
  - Spokesman: Ludovic Montier (FR), Vice-spokesman: E. Calabrese (UK)
  - Paolo Natoli (chair) e Francesco Piacentini (member)
- ***CNES leads phase-A until the end of 2021***
  - MHFT PM: Thierry Maciaszek
- ***SPICA is not a problem anymore***



# LiteBIRD: an Italian view

- ***Agreement ASI/COSMOS***
  - RM2, RM1, MI, MIB, SISSA, FE, PD, INAF-IASFBO, INAF-OATS, GE, INFN-Pi
  - LiteBIRD Addendum: 300K€
- ***Agreement ASI/LiteBIRD***
  - RM2, RM1, MI, MIB, SISSA, FE, PD, INAF-IASFBO, INAF-OATS, INFN-Pi, PI
  - Participation to phase A and beyond: 2M€
- ***INFN national initiative: LiteBIRD***
  - Sezione di: PI, MIB, FE, RMI, RMII, TS, MI
  - Squid Electronics activities: 300K€

| Cognome | Nome | Nodo |
|---|---|---|
| Baccigalupi | Carlo | SISSA |
| Bartolo | Nicola | UniPD |
| Basak | Sumen | SISSA |
| Bersanelli | Marco | UniMI |
| Bertacca | Daniele | UniPD |
| Campeti | Paolo | SISSA |
| Carones | Alessandro | UniRoma2 |
| Colombo | Loris | UniMI |
| Columbro | Fabio | Uni Roma1 |
| D'Alessandro | Giuseppe | Uni Roma1 |
| de Bernardis | Paolo | Uni Roma1 |
| De Petris | Marco | Uni Roma1 |
| Finelli | Fabio | INAF - OAS Bologna |
| Franceschet | Cristian | UniMI |
| Gerbino | Martina | INFN - FE |
| Gruppuso | Alessandro | INAF - OAS Bologna |
| Krachmalnicoff | Nicoletta | SISSA |
| Lamagna | Luca | Uni Roma1 |
| Lattanzi | Massimiliano | INFN - FE |
| Luzzi | Gemma | ASI |
| Maino | Davide | UniMI |
| Mandelli | Stefano | UniMI |
| Masi | Silvia | Uni Roma1 |
| Matarrese | Sabino | UniPD |
| Mele | Lorenzo | Uni Roma1 |
| Mennella | Aniello | UniMI |
| Migliaccio | Marina | UniRoma2 |
| Morgante | Gianluca | INAF - OAS Bologna |
| Nati | Federico | UniMIB |
| Natoli | Paolo | UniFE |
| Nicolò | Donato | UniPI |
| Pagano | Luca | UniFE |
| Paiella | Alessandro | Uni Roma1 |
| Paoletti | Daniela | INAF - OAS Bologna |
| Piacentini | Francesco | Uni Roma1 |
| Polenta | Gianluca | ASI |
| Poletti | Davide | SISSA |
| Realini | Sabrina | UniMI |
| Sandri | Maura | INAF - OAS Bologna |
| Signorelli | Giovanni | INFN Sezione di Pisa |
| Tartari | Andrea | INFN Sezione di Pisa |
| Tavagnacco | Daniele | INAF - OATS Trieste |
| Tomasi | Maurizio | UniMI |
| Villa | Fabrizio | INAF - OAS Bologna |
| Vittorio | Nicola | UniRoma2 |
| Zacchei | Andrea | INAF - OATS Trieste |
| Zannoni | Mario | UniMIB |

# ASI/LiteBIRD WBS

| | | | |
|---|---|---|---|
| WP3000<br>LiteBIRD Science<br>S. Matarrese, PD | WP3100<br>CMB Statistics<br>C. Baccigalupi, SISSA | WP3110 - CMB XC - C. Baccigalupi, SISSA | 3-6X11 |
| | | WP3120 - Large-scale galaxy distribution - M. Migliaccio, RM2 | 3-6X12 |
| | | WP3130 - Non-Gaussian statistics - D. Bertacca, PD | 3-6X13 |
| | WP3200<br>Fundamental physics<br>M. Lattanzi, FE | WP3210 - Astroparticle - M. Lattanzi, FE | 3-6X21 |
| | | WP3220 - Non-standard signatures from CMB polarization - A. Gruppuso, INAF-OAS | 3-6X22 |
| | WP3300<br>Inflation and Gravitational Waves<br>N. Bartolo, PD | WP3310 - Modelling the primordial GW background and primordial spectral distortions - N. Bartolo, PD | 3-6X31 |
| | | WP3320 - Forecasts for new space missions - F. Finelli, INAF-OAS | 3-6X32 |

# ASI/LiteBIRD WBS

| | | | |
|---|---|---|---|
| WP4000<br>Data Management<br>P. Natoli, FE | WP4100<br>Science Ground Segment<br>A. Zacchei, INAF-OATS | WP4110 - Science Ground Segment - D. Tavagnacco, INAF-OATS | 4-6X11 |
| | WP4200<br>E2E Simulations<br>P. Natoli, FE | WP4210 - Level S - D. Maino, MI | 4-6X21 |
| | | WP4220 - Systematics from electronics - F. Nati, MIB | 4-6X22 |
| | | WP4230 - Systematics from HWP modulator - F. Columbro, RM1 | 4-6X23 |
| | | WP4240 - Map-making - P. Natoli, FE | 4-6X24 |
| | | WP4250 - Electronics calibrations - A. Tartari, INFN | 4-6X25 |
| | WP4300<br>In Flight Calibration<br>M. Tomasi, Mi | WP4310 - In flight calibration - M. Tomasi, MI | 4-6X31 |
| | | WP4320 - Noise properties reconstruction - L. Lamagna, RM1 | 4-6X32 |
| | WP4400<br>Foregrounds<br>N. Krachmalnicoff, SISSA | WP4410 - Modelling the Galaxy in the microwave - N. Krachmalnicoff, SISSA | 4-6X41 |
| | | WP4420 - Cleaning techniques for foreground removal - D. Poletti, SISSA | 4-6X42 |
| | WP4500<br>From data to Science<br>L. Pagano, FE | WP4510 - De-lensing - C. Baccigalupi, SISSA | 4-6X51 |
| | | WP4520 - Power Spectrum & Likelihood - L. Pagano, FE | 4-6X52 |
| | | WP4530 - Parameter estimations - D. Paoletti, INAF-OAS | 4-6X53 |
| | | WP4540 - Reionization - M. Migliaccio, RM2 | 4-6X54 |

# ASI/LiteBIRD WBS

| | | | |
|---|---|---|---|
| WP5000<br>LiteBIRD H/W<br>F. Piacentini, RM1 | WP5100<br>Polarization modulator<br>P. de Bernardis, RM1 | WP5110 - HWP Rotator - P. de Bernardis, RM1 | 5-6X11 |
| | | WP5120 - Optical components - L. Lamagna, RM1 | 5-6X12 |
| | WP5200<br>Calibration & Testing<br>M. Bersanelli, MI | WP5210 - Sub-system calibration - C. Franceschet, MI | 5-6X21 |
| | | WP5220 - Cryogenics testing - G. Morgante, INAF-OAS | 5-6X22 |
| | WP5300<br>Redout Electronics<br>G. Signorelli, INFN | WP5310 - SQUID Controller Enclosure - G. Signorelli, INFN | 5-6X31 |
| | | WP5320 - SQUID Controller Electronic Boards - M. Zannoni, MIB | 5-6X32 |
| | | WP5330 - SQUID Controller Unit tests - D. Nicolò, PI | 5-6X33 |