Matthieu TRISTRAM

Birth: 27 November 1978
Nationality: French
tristram@ijclab.in2p3.fr

Laboratoire de Physique des 2 infinis Irène Joliot-Curie
Centre Universitaire d'Orsay (Bat. 200)
Tél : 01 64 46 83 88

Education

2018	**Habilitation à Diriger des Recherches** (Laboratoire de l'Accélérateur Linéaire - Orsay) *Planck: maps, likelihoods, cosmology* (22 January 2018)
2007	**CNRS permanent researcher** (Laboratoire de l'Accélérateur Linéaire - Orsay) *awardee 2007 of 2 positions for researcher (CNRS and CEA)*
2005-2007	**Post-Doctorat CNES** (Laboratoire de l'Accélérateur Linéaire - Orsay) *Calibration and preparation to* PLANCK *CMB data analysis*
2002-2005	**Doctorat de Physique** (30 September 2005) Laboratory of Subatomic Physics and Cosmology (LPSC - Grenoble) *Mesure des anisotropies du CMB avec les expériences* ARCHEOPS *et* PLANCK
2001-2002	**DEA Physique de la Matière et du Rayonnement** filière Subatomique (Université Joseph Fourier - Grenoble)
1999-2002	**Ecole Nationale Supérieure de Physique Grenoble** (ENSPG - Grenoble)

Collaborations

2017-	**CMB-S4** *(US next-generation ground-based CMB experiment)*
2016-	**LiteBIRD** *(JAXA space mission mission for CMB polarization measurements)* member of the LiteBIRD Government Board and LiteBIRD-France coordination team, leader Data Management, IN2P3 scientist coordinator
2012-	**LSST** *(Large Synoptic Survey Telescope de 8m)* member of the DESC collaboration
2009-2015	**EBEx** *(US balloon-borne polarimeter to measure the intensity and polarization of the CMB radiation)* leader for the angular power spectra and likelihood
2002-2016	**Planck** *(ESA space mission targeting CMB anisotropies in temperature and polairsation)* Planck scientist, member of the CoreTeam HFI, co-leader of map production, leader of the group for systematic polarization effects, leader of the reionization history science group
2002-2006	**Archeops** *(balloon-borne experiment for CMB and polarized dust)* leader of the last spectra analysis

Research

- **Calibration of CMB instruments**
  Pre-flight calibration of PLANCK-HFI, characterisation of ARCHEOPS detectors
  Instrumental characterisation (beam shape, time-response, cosmic-ray effects, polariser calibration)

- **CMB data analysis**
  Development of map-making methods to generate sky maps from timestreams
  Development of estimators for angular power spectra
  Study of algorithm for E-B separation in CMB polarisation
  Study of residual systematic effects in polarisation (at large and small angular scales)
  Development of likelihoods for cosmological constraints based on CMB data

- **Cosmic background and objects**
  Study of secondary anisotropies from Sunyaev-Zel'dovich effect
  Study of the integrated Sachs-Wolf effect by cross-correlating CMB with Galaxy surveys (2MASS, SDSS)

- **Cosmological models**
  Theoretical studies on cosmological models, inflation and post-inflationnary reheating
  Phenomenological studies and constraints on reionization of the Universe
  Contraints on the ΛCDM cosmological model and its extensions (r, lensing, $\Omega_{\rm GW}$, $\Omega_{\rm k}$)
  Phenomenological studies and cosmological contraints on the neutrino sector ($\sum m_\nu$, $N_{\rm eff}$)

Responsibilities

Leader of the CMB group at LAL and then IJClab [Jun 2018 - Dec 2021]
(4 researchers, 1 university staff, 2 PhD students, 2 post-docs)

Committee
member of the board of the Programme National de Cosmologie et Galaxies (PNCG) [since 2017]
member of CMB-France [since 2016]
member of the scientific council of DIM-ACAV+ [since 2016]
member of the COPIL for IN2P3 prospectives (Inflation physics and dark energy) [2019-2021]
member of the Editorial Board pour le journal open-access Universe [2019-2021]

Jurys
referee for scientific journals (PRL, MNRAS, A&A, JCAP, PRD)
referee ERC [2017, 2018]
expert for the Natural Sciences and Engineering Research Council of Canada [2016]
member of the selection committee for Maitre de Conférence Université Aix-Marseille [2014]
member of experts for section 29 at University Pierre et Marie Curie (Paris VI)
member of PhD jury [2011, 2012, 2020]

Supervision

PhD Students (4 students)

2020- Adrien LaPosta (co-superviser)
Physique au delà du modèle standard avec les mesures de la polarisation du fond diffus cosmologique

2016-2019 Sylvain Vanneste
Constraints on primordial gravitational waves from the large scales CMB data

2012-2015 Marta Spinelli (co-superviser)
Cosmological parameter estimation with the Planck satellite data: from likelihoods to neutrino properties

2008-2011 Clément Filliard (co-superviser)
Calibration of Planck-HFI data

Post-doc (4 post-doc)

2021-2023 Stephane Ilic
Scientific forecasting for LiteBIRD

2018-2020 Hiroaki Imada
Optical study for the design of the High Frequency Telescope on LiteBIRD

2014-2016 Anna Mangilli
Statistical study of the large angular scales and likelihood construction for Planck

2012-2014 Benjamin Rouillé-d'Orfeuil
Construction of a high-multipole temperature and polarization likelihood for Planck

2009-2012 Gemma Luzzi
Constraints on the CMB temperature redshift dependence from SZ and distance measurements

Distinctions

- Group Achievement Award 2018 of the Royal Astronomy Society Prize (for Planck)
- Gruber Cosmology prize 2018 (as Planck collaborator)

Communication

Publications
209 refereed publications (147 within PLANCK collaboration)
8 papers in first-author
leader and corresponding author for 3 PLANCK collaboration papers
revue article for *Reports on Progress in Physics*
Total citations: 48985, h-index: 93

Seminars
15 seminars in scientific institutions (CNRS and international)

Conferences
21 oral presentations in national and internationals conferences
(including 3 invitations for PLANCK results)

Outreach
5 interview for scientific newspapers: Ciel&Espace (J. Bourdet, avril 2020), Science&Vie (B. Rey, nov. 2017), PhysicWorld (K. Cooper, sept. 2016), l'Express (V. Garcia, sept. 2016), Science&Vie (A. Orliac, avril 2009)
2 Press-Releases (ESA 2016, IN2P3 2021)
Developer/Maintainer of scientific websites (Archeops, LiteBIRD, Planck, wikipedia)