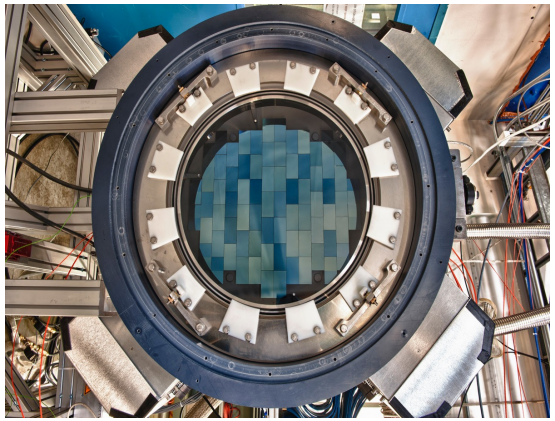
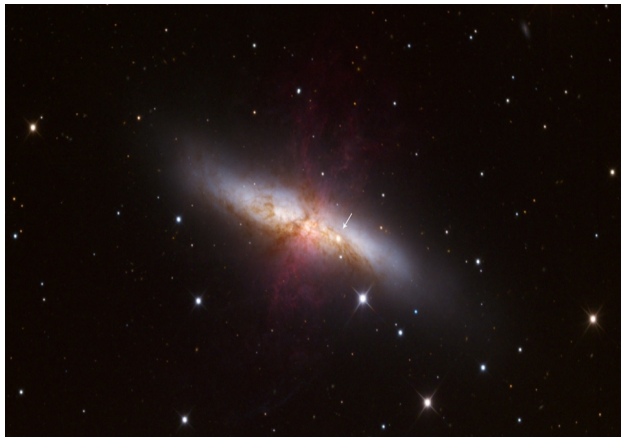
Cosmology @ UCL Bloomsbury

- Cosmology within Astrophysics Group (P&A Department) started in 2004.
- Currently 6 Cosmology staff members (out of 21)

+ 18 Post-docs+ 10 PhD students

- Main themes: Early Universe, Dark Matter and Energy, statistics of cosmic fields, Bayesian inference, Galaxy formation and evolution, re-ionization,…
- Main international projects: DES, KiDS, CLASH, DESI, LSST, Euclid, LOFAR, SKA, Planck, …
- Outreach (artists in residence, humanities, …)
- Funding from STFC, UKSA, RS, Leverhulme, ERC, …





UCL's cosmologists

UCL Bloomsbury Cosmology cast (as of October 2014)

6 Staff

Filipe Abdalla
Benjamin Joachimi
Ofer Lahav
Hiranya Peiris
Andrew Pontzen
Amelie Saintonge

18 Post-docs

Sreekumar Balan
Aurelien Benoit-Levy
Emma Chapman
Franz Elsner
Geraint Harker
Stephanie Jouvel
Donnacha Kirk
Adrienne Leonard
Boris Leistedt
Michelle Lochner
Marc Manera
Maria Marcha
Alex Merson
Bruno Moraes
Nina Roth
Marzia Rivi
Iftach Sadeh
Henrique Xavier

10 PhD Students

Lucinda Clerkin
Davide Gualdi
William Jennings
Michael McLeod
Antonella Palmese
Keir Rogers
Daniela Saadeh
Robert Schuhmann
John Soo
Teresita Suarez Noguez

Filipe Abdalla et al.

- Cosmology from optical and radio surveys
- Large scale structure, weak lensing and photometric redshifts [MSSL]
- Statistical tools in cosmology and radio astronomy [IC]
- Neutrino masses

Benjamin Joachimi et al.

- Galaxies:
- galaxy alignments with large-scale structure
- galaxy size, luminosity, etc. dependence on local density and environment
- link between galaxy morphology and its formation/evolution
  [MSSL, IC]
- Large-scale structure cosmology:
- weak gravitational lensing methodology
- joint analysis of large-scale structure probes
- analysis of KiDS, DES surveys; preparation of LSST, Euclid surveys
  [MSSL, IC]
- Data analysis:
- models and estimators of covariance
- optimal treatment of large-scale structure systematics
- extraction of non-Gaussian information in large-scale structure data [IC]

Hiranya Peiris et al.

Theory *General focus on implementing inflation within fundamental theory*

- Numerical simulations in full General Relativity probing inflationary physics (1+1D AMR code) [KCL]
- Numerical exploration of many-field inflation (www.modecode.org) [QMUL]

Observation *Cosmology and astrophysics from CMB and LSS data*

- Hierarchical Bayesian modelling (applications in many areas of cosmology) [IC]
- Novel wavelet transforms for extraction of non-Gaussian information from CMB and LSS data [MSSL]
- Machine learning for classification problems [MSSL]
- Sampling and inference in very high-dimensional problems [IC]

Andrew Pontzen et al.

- Galaxy formation & dark matter: numerical and analytic dynamics [KCL]
- Cosmic microwave background beyond-LCDM [QMUL/MSSL/IC]
- Bayesian statistics & maximum entropy methods [IC]
- Large scale structure & Lyman-alpha forest [IC]

Amellie Saintonge et al.

- Galaxy formation and evolution
- Molecular gas, dust, and star formation in galaxies at low and high redshift
- Multi-wavelength galaxy surveys and statistical methods
- Infrared, millimeter and radio astronomy

[MSSL, IC]

Ofer Lahav et al.

- DES: DE (multi-probes) and non-DE
- Thinking ahead (stage IV) : DESI, LSST, Euclid [with all]
- DE on Mpc scales and Newtonian analogies of GR [QMUL]
- Gravitational non-Gaussianity of density fields [IC]
- Gravitational redshift from clusters
- Bayesian statistics, neural nets, classification [IC, MSSL]

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