

# KCL TPPC Group

Malcolm Fairbairn  
King's College London

# King's College

- Established in 1829 as reaction to “Godless Gower Street Scum” at UCL
- Originally has a religious core – literally – there is a chapel in the middle of Strand Campus
- Spread out across many campuses and hospitals, (Guys, Denmark Hill, St Thomas’s Waterloo) oldest part is on Strand – we are located there.

# King's College London

- There is no astrophysics group at KCL
- There is not really an experimental particle physics group at KCL (see Bobby Acharya)
- There are two theoretical physics groups:-
- In MATHS there are string theorists (and closely related), most phenomenological are Sakura Nameki Schaefer, Peter West, Neil Lambert, Dario Martelli etc  
- *VERY GOOD PEOPLE BUT PRETTY FORMAL STUFF*
- Then in the PHYSICS DEPARTMENT there is us:-

Faculty of Natural & Mathematical Sciences

Department of Physics

KING'S  
College  
LONDON

The Theoretical Particle Physics & Cosmology Research Group



Head of Group

Prof. John Ellis



Prof. Mark  
Hindmarsh



Prof. Mark Schabinger



Prof. Stefan Scherer



Dr. Dobby  
Anwar



Dr. Juan Alexander



Dr. Maxim  
Fedorenko



Dr. Eugene Lim



James Healy



Dr. David  
Sead



Catherine Cox



Peter Duffell



Maria  
D'Amico



Oliver  
Dunkel-Schetter



Thomas  
Ely



Felix  
Gubser



John Hebe



Robert Heise



Nicholas Harnett



Gabriel Pagnanini



Thomas  
Sebastian



Maria Soria



Apurva Waghmare



Tsung-Yen



# Bobby Acharya

- String Theory and Phenomenology – compactification of M-theory on G2 holonomy manifolds
- Dark Matter, both Thermal relics and Axions, dark radiation, interested in probes of high energy physics on all cosmological scales
- Is also on ATLAS as genuine experimentalist



# Jean Alexandre

- Quantum Field Theory
- Perturbative and non-perturbative aspects
- Lorentz Violating field theories
- Inflation



# John Ellis

- Particle Physics Theory
- Many papers on inflation since the very first days (models based on supersymmetry, supergravity and string theory)
- Dark Matter (accelerator constraints, supersymmetric models)
- Astrophysical and cosmological tests of Lorentz violation



# Malcolm Fairbairn

- dark matter direct, indirect & collider detection
- Inflation & early Universe Particle Cosmology
- Axions and axion like particles
- Particle-astrophysics (e.g. effect of dark matter on stars)
- New techniques to measure DM in galaxies
- Very interested and disturbed by dark energy





# Eugene Lim

- Numerical Relativity
- Relativistic Soliton Collisions
- Quantum information in Cosmology
- Weak Lensing in Cosmology
- Modified Gravity



# Nick Mavromatos

- Astroparticle physics (dark matter dark energy)
- Quantum gravity and string theory phenomenology
- Theoretical cosmology including inflationary scenarios
- Phenomenology and model building



# Mairi Sakellariadou



- Large body of work on Inflation and Topological Defects
- quantum gravity (cosmology as a group theory condensate, loop quantum cosmology, noncommutative spectral geometry, deformed GR)
- cosmology from models with large extra dimensions
- $f(R)$  gravity



# Sarben Sarkar



- Role of neutrinos in Beyond Standard model Physics
- Torsion
- M-theory applications

# Postdocs

- Aleksandra Drozd – dark matter and BSM particle pheno
- Jeremie Quevillon – higgs physics dark matter and BSM particle pheno, SUSY
- Kazuki Sakurai – LHC physics, SUSY
- Dimitris Skliros – string theory and cosmic strings

# Lots of excellent students!



James Drake



Danyal  
Dault



Sabrina Cui



Felix Cui



Maria  
Di\_Gregorio



Oliver  
Dorian



Thomas  
Eghan



Felix  
Grafhaus



John Hall



Robert Hagen



Nicholas Hausler



Chaiti Parthasarathi



Thomas  
Kabanian



Maria Kuro



Animesh Wadhwani



Tsung Yao