

Department of Physics and Astronomy

<http://www.phys.ucl.ac.uk/>

Contact person: [J. Tennyson](#)

Profile: PA at UCL is one of the UK largest physics departments with major research activity in Astrophysics, High Energy Physics, Condensed Matter Physics and Atomic, Molecular, Optical and Positron Physics. Its Theoretical Atomic and Molecular Physics and Astrophysics group comprises about 25 scientists on fundamental theoretical molecular physics and its applications. This activity involves both developing theoretical models and codes for calculating molecular spectra and for treating electron (and positron) molecule collisions, and using these methodologies to provide molecular data for a large variety of problems including those to with astrophysics, atmospheric physics, plasma etching, fusion research, neutrino mass measurements, radiation damage models and spacecraft re-entry physics. Much of the data generated for this work is made available via small local, web-accessible databases as well as being deposited in international databases such as HITRAN. UCL is leading the proposed ESA space mission EChO (Exoplanet Characterisation Observatory) and TAMPA is responsible for providing much of the spectroscopic data on hot molecules which is essential for the mission to be successful.

Role of UCL in the project: UCL will be active in setting up collaboration with the USA through its collaboration with HITRAN (WP4). A particular attention will be directed towards US users connected to the HITRAN database (WP3). UCL will support the setting up of a VAMDC node in Brazil at Universidade Federal Do Parana (UFPR, Brazil) through training at UCL and at UFPR (WP4). UCL will be involved in all activities related to school/higher education as well as citizen-scientists in WP3. UCL will participate to definition of policies and strategies in WP2. UCL will organise meetings as indicated on GANTT charts (PERT diagrams) and in section 2.3. In particular UCL will host the Year 2 External Partners meeting, and the Review Board meeting on Month 16.

Key persons:

J. Tennyson Massey Professor of Physics

Expertise: Molecular spectroscopy, applications to atmospheric and astro physics, electron-molecule collisions, molecular data; models and data for plasma physics (etching, spacecraft re-entry). He has many international collaborations including ones with Russia, India, Brazil and the USA.

Role in project: Link to HITRAN and other spectroscopic databases; electron-molecule collision databases such as LXCAT.

C. Hill Researcher

Expertise: Molecular spectroscopy, database programmer and XSAMS/XML.

Role in project: Interface to HITRAN, ExoMol, GEISA.

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