Cloudy Workshop Participants

2017 August Queen's University Belfast

Prof Francis Keenan, Queen's University Belfast Solar and stellar physics, atomic data for astrophysics, plasma physics. Francis' office mate, Ted of School, is also shown. Ted is also very interested in the teducation of students. Ted and Francis very generously provided local support for the workshop.	
Gary Ferland, University of Kentucky Quantitative spectroscopy, chemical evolution of the cosmos, AGN and feedback, numerical plasma simulations, atomic & molecular physics	
Luis Fernández Menchero, Queen's University Belfast I work in calculation of atomic data production for plasma physics interest, both fusion and astrophysics. I do any kind of calculation: electron-impact excitation and ionization, photoionization, recombination, etc. With several methods, fundamentally R-Matrix. I have already work with other data bases, such as OPEN-ADAS or CHIANTI.	
Marta Venanzi, University of Southampton I work on the theoretical modelling of dusty winds in Active Galactic Nuclei (AGN). I used CLOUDY photoionization models to feed into the hydrodynamical simulations currently ongoing in my group. In parallel, I am building an analytical model to investigate the dynamics of the parsec-scale dusty environment of AGN, outlining the regime for which radiatively driven dusty winds become possible.	

Alex Jones, University of Hertfordshire

I am looking at the physics of planetary nebulae in the Galactic Plane which are optically-invisible, obscured by dust. I have been working with near-infrared spectra of these objects, investigating their excitation mechanisms and evolutionary status. I am hoping to simulate the ionized, molecular (H2) and dusty regions using Cloudy, to produce models of structure and excitation, along with SEDs at various evolutionary stages, in order to compare with observations.

Connor Robinson, Boston University

My research focuses on T Tauri stars, in particular looking at magnetically controlled accretion flows from the inner edge of the disk to the star. Shocks from these flows form at the stellar magnetic footprint, producing X-Ray emission that heats and ionizes an overlaying pre-shock region. Previous work has successfully modeled the continuum emission in this region, but it remains an open problem to model the complicated line emission that arises in these systems. I plan to improve the Calvet (1998) shock models with more detailed modeling with Cloudy.

Cornelia Pabst, Leiden Observatory

'I am m currently working on [CII] 158 mu fine-structure line observations in the Orion Nebula Complex. Previously we have studied the [CII] line in the region of the Horsehead Nebula, studying the interplay of stellar radiation and molecular cloud, and relating different tracers with each other. The goal is to gain more insight into the origin of [CII] emission from the ISM. The new data also allow us to study the kinematics of the Orion Veil. In these studies one wants to model the physical conditions as related to emission as well.

Michael Turkington, Queen's University Belfast

My research is mainly concerned with the production of high-quality atomic data for use in collisional-radiative modelling. I'm also involved in the continued development of the R-matrix scattering codes, so I have a keen interest in computational physics. While my work has been focused on applications to atoms and ions of interest in nuclear fusion, I am eager to expand my skillset to include modelling of astrophysical plasmas

Swayamtrupta Panda, Nicolaus Copernicus Astronomical Center, Warsaw.

My present work includes modelling the broad-line region clouds in AGNs to study the mechanisms of formations of Fe2 and Hbeta which will be used to characterize the Eigenvector 1 (which is the strength of Fe2 normalised to the Hbeta). This, in turn, is used to understand the dominant driver behind the Quasar Main sequence. I've recently started to use CLOUDY to prepare synthetic SEDs to study the dependence of maximum of the accretion disk temperature on the Eigenvector 1 following the standard Shakura-Sunyaev disk model.

Fergus Cullen, University of Edinburgh.

My work is mainly focused on post-processing data from a cosmological hydrodynamical simulation (FiBY) to study the UV and optical properties of galaxies during the reionization epoch ($z > 6$). Our goal is to explore whether the simulations can account for the high equivalent width emission lines (particularly CIII] and [OIII]) reported in galaxies at $z > 6$, and make predictions for JWST. I am also involved in two spectroscopic surveys: VANDELS, which will provide rest-frame UV spectra of galaxies at $z > 3$; and KLP, which will provide spatially resolved optical emission line maps of galaxies at $z \sim 2$.

Andrew Conroy, Queen's University Belfast

I am working in the 'Atomic physics for astrophysics' group. At undergraduate level, in my final year project, I used collisional-radiative models to identify diagnostic line ratios for helium-like species. I also made some crude modifications to the models to estimate the effect of introducing external sources of radiation. I also have some experience in radiative data calculation (A-values) but not in collisional calculations.

Adam Carnall, Royal Observatory Edinburgh My research interests involve modelling the spectral energy distributions of galaxies at high redshift in order to extract physical information such as star formation histories, metallicities, dust content, etc. To that end I'm writing a piece of software called Bayesian Analysis of Galaxies for Physical Inference and Parameter EStimation, or BAGPIPES, and I'd like to include realistic ionising continuum and nebular emission lines in the code using Cloudy.	
Ryan Smyth, Queen's University Belfast. My current work involves the calculation of accurate atomic data for atoms and ions of interest to both fusion and astrophysics using the R-matrix scattering codes for electron-impact excitation, electron-impact ionisation and photoionisation. I currently have experience with collisional-radiative modelling for fusion plasma.	
Tom Kemp, University of Edinburgh. A lot of my work has focused on the technical aspects of JWST and building a simulator for the Mid-InfraRed Instrument (MIRI) in all observing modes. In doing so, we tested MIRI"s capabilities in observing high redshift, star forming galaxies, specifically nebular emission lines with the Medium Resolution Spectrometer (MRS). Im interested in the properties of these emission lines at High-Z and understanding the physical parameters of such objects. Looking to introduce the nebular continuum into my models and ensure they represent realistic High-Z galaxies	
Matilde Mingozzi, University of Bologna, I'm currently working on a sample of nearby AGN, investigating their kinematics to identify outflows and the dominant ionisation source in each part of the galaxy. The aim of our work is on the one hand to determine the dynamical properties of outflows, while on the other we want to study the characteristics of the narrow line region produced by the AGN, making use of photoionisation models, constraining them with the observed optical line ratios. The idea is to understand the physical conditions of outflows, combining kinematic and photoionisation models.	

Ho-Gyu Lee, KASI (Korean Giant Magellan Telescope; Korea Astronomy and Space Science Institute) I have two interests : supernova remnants. and symbiotic stars. For the former, I have near infrared spectra mainly dominated by [Fe II] lines, for the latter have high-resolution optical spectra covering 4000 to 10000 A.	
Ciaran Fairhurst, University of Sussex. My primary research interesst is currently in Extreme Emission Line Galaxies, building a fully customisable MCMC based SED fitting code called INTERROGATOR which will be able to model these objects and all other galactic sources in a way that is as flexible as possible. CLOUDY represents a vital part of this process, taking a purely stellar SED made using an SPS model and adding continuum/line emission from the interstellar medium.