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| Last updated: | 15 Dec 2014 |

**JOB DESCRIPTION**

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| Post title: | **Research Fellow** | | |
| Academic Unit/Service: | Physics & Astronomy / Astronomy Group | | |
| Faculty: | FPSE |  |  |
| Career pathway: | ERE\* | Level: | 4 |
| \*ERE category: | Research pathway | | |
| Posts responsible to: | Christian Knigge | | |
| Posts responsible for: | N/A | | |
| Post base: | Office-based | | |

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| Job purpose |
| To carry out astronomical research on the project “Accretion Disk Winds in Active Galactic Nuclei” within the framework of the STFC Consolidated Grant awarded to the astronomy group in the Department of Physics & Astronomy. Building on an existing ionization and radiative transfer code for modelling disk winds in AGN, the successful applicant will be responsible for leading the development of a joint radiative transfer and hydrodynamic modelling capability. This research will take place within the framework of an existing international collaboration, which involves experts on both radiative transfer and hydrodynamics. |

| Key accountabilities/primary responsibilities | | % Time |
| --- | --- | --- |
|  | Lead an effort to carry out joint radiative transfer and hydrodynamic modelling of disk winds in AGN, including the publication of results in the refereed literature and delivering talks at international conferences | 60 % |
|  | Lead and/or contribute to other modelling efforts within the collaboration | 10 % |
|  | Contribute to the general development, maintenance and public releases of software produced within the collaboration. | 10 % |
|  | Lead and/or contribute to other astronomical research projects | 10 % |
|  | Lead and/or contribute to future grant proposals | 5 % |
|  | Any other duties as allocated by the line manager following consultation with the post holder. | 5 % |

| Internal and external relationships |
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| This research will take place within the framework of an existing international collaboration, which involves experts on both radiative transfer and hydrodynamics. |

| Special Requirements |
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| *Applications for Research Fellow positions will be considered from candidates who are working towards or nearing completion of a relevant PhD qualification. The title of Research Fellow will be applied upon successful completion of the PhD. Prior to the qualification being awarded the title of* ***Senior Research Assistant*** *will be given.* |

**PERSON SPECIFICATION**

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| Criteria | Essential | Desirable | How to be assessed |
| Qualifications, knowledge and experience | PhD in astronomy or astrophysics, or equivalent skills and experience  Experience/expertise in either numerical hydrodynamics or ionization/radiative transfer  Broad and deep background knowledge and understanding of astronomy and physics  Strong programming/computational skills | Experience/expertise in **both** numerical hydrodynamics or ionization/radiative transfer  Background in accretion physics, outflows and/or active galactic nuclei  Experience with Monte Carlo-based ionization/radiative transfer methods  Experience with grid-based hydrodynamics, ideally ZEUS/Athena | Degree  CV/ references/ publications/  interview  CV/  references/  publications/  interview  CV/  references/  publications/  interview  CV/  references/  publications/  interview  CV/  references/  publications/  interview |
| Planning and organising | Ability to lead a major research project independently from start to finish |  | CV/  references/  publications/  interview |
| Problem solving and initiative | Ability to recognize and solve problems independently | Ability to find and develop new interesting research strands/projects | CV/  references/  publications/  interview |
| Management and teamwork | Ability to work within a close collaboration  Ability to assist in supervision of PhD students |  | CV/  references/  publications/  interview |
| Communicating and influencing | Ability to independently write and publish high-impact research papers and/or successful grant proposals  Ability to give well-received talks to professional audiences |  | CV/  references/  publications/  interview |

**JOB HAZARD ANALYSIS**

**Is this an office-based post?**

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| x Yes | If this post is an office-based job with routine office hazards (eg: use of VDU), no further information needs to be supplied. Do not complete the section below. |
| ☐ No | If this post is not office-based or has some hazards other than routine office (eg: more than use of VDU) please complete the analysis below.  Hiring managers are asked to complete this section as accurately as possible to ensure the safety of the post-holder. |

## - HR will send a full PEHQ to all applicants for this position. Please note, if full health clearance is required for a role, this will apply to all individuals, including existing members of staff.

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| **ENVIRONMENTAL EXPOSURES** | **Occasionally**  (<30% of time) | **Frequently**  (30-60% of time) | **Constantly**  (> 60% of time) |
| Outside work |  |  |  |
| Extremes of temperature (eg: fridge/ furnace) |  |  |  |
| ## Potential for exposure to body fluids |  |  |  |
| ## Noise (greater than 80 dba - 8 hrs twa) |  |  |  |
| ## Exposure to hazardous substances (eg: solvents, liquids, dust, fumes, biohazards). Specify below: |  |  |  |
| Frequent hand washing |  |  |  |
| Ionising radiation |  |  |  |
| **EQUIPMENT/TOOLS/MACHINES USED** | | | |
| ## Food handling |  |  |  |
| ## Driving university vehicles(eg: car/van/LGV/PCV) |  |  |  |
| ## Use of latex gloves (prohibited unless specific clinical necessity) |  |  |  |
| ## Vibrating tools (eg: strimmers, hammer drill, lawnmowers) |  |  |  |
| **PHYSICAL ABILITIES** | | | |
| Load manual handling |  |  |  |
| Repetitive crouching/kneeling/stooping |  |  |  |
| Repetitive pulling/pushing |  |  |  |
| Repetitive lifting |  |  |  |
| Standing for prolonged periods |  |  |  |
| Repetitive climbing (ie: steps, stools, ladders, stairs) |  |  |  |
| Fine motor grips (eg: pipetting) |  |  |  |
| Gross motor grips |  |  |  |
| Repetitive reaching below shoulder height |  |  |  |
| Repetitive reaching at shoulder height |  |  |  |
| Repetitive reaching above shoulder height |  |  |  |
| **PSYCHOSOCIAL ISSUES** | | | |
| Face to face contact with public |  |  |  |
| Lone working |  |  |  |
| ## Shift work/night work/on call duties |  |  |  |