**Role Description**

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| **Faculty/Service:** | **Environment and Engineering** |
| **Department:** | **Mathematics, Physics and Electrical Engineering**  |
| **Role Title:** | **Research Fellow in Mathematics** |
| **Grade:** | **Grade 6** |
| **Category:** | **Research** |
| **Role Purpose:**  | **This role is funded by the Leverhulme Research Project Grant RPG-2017-228 “Dressing methods and complexity reduction of integrable network models”. The objective of the project is to calculate asymptotic properties of random networks models using the method of differential identities.**  |
| **Reports to:** | **Dr Antonio Moro** |

**General Duties and Responsibilities:**

The post holder will work on a research project aimed at the development of analytical methods based on the theory of nonlinear partial differential equation for the calculation of partition functions of complex systems, contribute to the dissemination of results through research articles, participation to international conferences and regular contribution to the blog of the project.

**Specific Duties and Responsibilities:**

To take principal responsibility for the delivery of Leverhulme Research Project Grant 2017-228. The project will focus on the following:

• To work on all aspects of the project, to be prepared to study the relevant literature.

• To discuss the results at weekly meeting.

• To interact effectively with the collaborators in the project.

• To disseminate results both at conferences and in the scientific publications.

• To undertake tasks assigned by the Principle Investigator.

• There will be an opportunity to do a small amount of teaching in the Department of Mathematics, Physics and Electrical Engineering

This Role Description is not intended to be an exhaustive list of duties and will be subject to periodic review by the University Executive and/or appropriate others in discussion with the post-holder and Principal Investigator.

**Location:** Northumbria University, City Campus

**Start Date:** January 2021 or as soon as possible thereafter

**Attendance Requirements:** The post is 100% Full Time Equivalent (37 hours per week) for 12 months. The post requires attendance at Northumbria University. There may be occasions where overseas travel is required to conduct collaborative research and present/communicate results at conferences/workshops and project meetings.

**DBS Required:** No

**Person Specification**

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| **Specific Knowledge** |
| **Criteria** | **Weight** | **A** | **I** |
| Subject expertise in mathematical modelling and solution methods of partial differential equations  | Essential |[x] [x]
| Subject expertise in theory of integrable systems  | Desirable |[x] [x]
| Knowledge of statistical mechanics | Desirable |[x] [x]

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| **Skills, Abilities & Behaviours** |
| **Criteria** | **Weight** | **A** | **I** |
| Ability to work independently and within a team environment  | Essential |[x] [x]
| Effective programming skills of symbolic and numerical computations and use of appropriate software packages and languages (e.g. Wolfram Mathematica, Maple, Matlab, Python, C/C++) | Essential |[x] [x]
| Excellent communication and interpersonal skills | Essential |[ ] [x]
| Excellent analytical and problem solving skills | Essential |[x] [x]
| Ability to carry out research within agreed timelines, meeting project milestones and producing research to an appropriate standard  | Essential  |[x] [x]

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| **Experience** |
| **Criteria** | **Weight** | **A** | **I** |
| Substantial experience of conducting research in the area of nonlinear PDEs  | Essential |[x] [x]
| Experience of publishing research outcomes | Essential |[x] [ ]

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| **Education & Training** |
| **Criteria** | **Weight** | **A** | **I** |
| PhD in Applied Mathematics or Theoretical Physics | Essential |[x] [ ]
| Postdoctoral experience in a relevant area | Desirable  |[x] [ ]

**Legend:** A = Application I = Interview