



**UNIMORE**  
UNIVERSITÀ DEGLI STUDI DI  
MODENA E REGGIO EMILIA

**DIREZIONE ORGANIZZAZIONE, PROGRAMMAZIONE E SVILUPPO RISORSE UMANE**

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**THE MANAGER**

GIVEN the public selective procedure, based on qualifications and interview, for the assignment of no. 1 senior research grant at the Department of Physics, Informatics and Mathematics, Tutor: Prof. Massimo GASPARI, announced with decree of 16 May 2024 prot. no. 122367 - rep. no. 802/2024 and published on the online noticeboard of the University of Modena and Reggio Emilia;

GIVEN the tutor's request regarding the rectification of some clerical errors, prot. nr. 124744 of 20 May 2024;

**DECREES**

**1. The modification of articles 3 and 4 of the Notice in Italian as follows:**

*Art. 2*

*Sede, area disciplinare, titolo della ricerca, obiettivi generali della ricerca, tutor, programma del colloquio e materie dei titoli*

*omissis*

**Obiettivi della ricerca:**

Il progetto ERC Consolidator BlackHoleWeather (BHW) è un'iniziativa rivoluzionaria che esplora i meccanismi di feeding e feedback dei buchi neri, dalle macro alle micro scale. I candidati modelleranno e analizzeranno processi astrofisici negli aloni cosmici (mezzo intracluster, circumgalattico, e interstellare) attraverso simulazioni magneto-idrodinamiche (MHD) all'avanguardia e confronti con osservazioni multibanda dei principali telescopi (ad es. JWST, Chandra, XMM, Hubble, ALMA, MUSE).

Sono particolarmente apprezzate solide competenze di 1- programmazione (ad es. C++, Python, Cuda, Fortran) per lo sviluppo di simulazioni MHD 3D avanzate, principalmente tramite codici moderni a griglia adattiva (come GAMER, Athena++, o FLASH); 2- calcolo ad alte prestazioni/GPU; 3- processi nei gas astrofisici (turbolenza, campi magnetici, polvere, raffreddamento, network chimici).

I candidati selezionati avranno un ruolo cruciale nel team ERC BHW, supportati da risorse di primo livello e numerose opportunità di collaborazione internazionale e di divulgazione, inclusa la partnership con istituti come Princeton, MIT e NTU.

Queste posizioni di ricerca offrono un'opportunità unica di contribuire in modo innovativo agli aspetti teorici e osservativi dell'astrofisica moderna, avanzando notevolmente la comprensione dei buchi neri e delle galassie.

*omissis*

*Art. 4*

*Requisiti generali di ammissione*

*omissis*

Ai fini della partecipazione al bando in oggetto, oltre a quanto suindicato, sono richiesti, a pena di esclusione, i seguenti ulteriori requisiti di qualificazione scientifica:

- almeno nr. 12 mesi di attività di ricerca (assegna di ricerca, borse, contratti) nelle aree collegate al progetto presso Università o enti di ricerca

*omissis*

**2. The modification of articles 3, 4 and 5 of the Notice in English as follows:**

*Art. 2*

*Location, subject area, research title, general aims of research, tutor, interview programme and title subjects omissis*

**Aims of research:**

The ERC Consolidator BlackHoleWeather (BHW) project is a groundbreaking initiative exploring the feeding and feedback mechanisms of black holes, from macro to micro scales. Candidates will model and analyze astrophysical processes in cosmic haloes (intracluster, circumgalactic, and interstellar medium) through state-of-the-art magneto-hydrodynamic (MHD) simulations and comparisons with multiband observations from leading telescopes (e.g. JWST, Chandra, ALMA, MUSE).

Particularly appreciated strong skills are 1- programming (e.g. C++, Python, Cuda, Fortran) for the development of advanced 3D MHD simulations, primarily via modern adaptive grid codes (such as GAMER, Athena++, or FLASH); 2- high performance computing/GPU; 3- processes in astrophysical gases (turbulence, magnetic fields, dust, cooling, chemical networks).

Selected candidates will play a crucial role in the ERC BHW team, supported by world-class resources and numerous international collaboration and outreach opportunities, including partnerships with institutions such as Princeton, MIT and NTU.

These Fellowship positions offer a unique chance to make novel contributions to key theoretical and observational aspects of modern astrophysics, ultimately advancing our understanding of black holes and galaxies.

*omissis*

*Art. 4*

*General admission requirements*

*omissis*

For the purposes of participating in the call for applications in question, in addition to the above, the following additional qualifications are required:

- at least nr. 12 months of research activity (research grants, scholarships, contracts) within the areas listed above spent at universities or research institutions.

*omissis*

*Art. 5*

*Applications and deadline*

*omissis*

The submission application must be filled in in each part following the electronic guidelines and the applicants shall declare, under their own responsibility (D.P.R. 28 December 2000, n. 445):

- a) first name, surname and Italian tax code;
- b) date and place of birth;
- c) citizenship. In the case of non-EU citizens, indicate whether you already have or have started the procedures to obtain a valid residence permit;
- d) address and domicile address, if different from the residence address;
- e) contact details for any communication (including the certified e-mail address, if available);
- f) degree held (bachelor's diploma prior to Ministerial Decree 509/99 or specialist degree pursuant to Ministerial Decree 509/99 or master's degree pursuant to Ministerial Decree 270/04), the grade obtained, as well as the date and the University from which it was obtained or the qualification academic qualification obtained at a foreign university, equivalent to the Italian qualification, or the academic qualification obtained at a foreign university for which recognition of suitability is requested;
- g) PhD diploma, if held, as well as date of achievement and the University where the course is administratively located;
- h) enjoyment of political rights;
- i) not to be enrolled in degree courses, specialist or master's degrees, medical specialization schools, in Italy or abroad;
- j) not to hold positions at universities or bodies indicated in the previous art. 4 of the notice;
- k) not to be a private employee, even part-time, and not to have income deriving from freelance activities carried out on a continuous basis;
- l) to be/not to be a public employee;

- m) not to have a kinship or affinity relationship, up to and including the fourth degree, with a professor belonging to the Department requesting the grant or with the Rector, the Director General or a member of the Board of Directors of the University, as required by the art. 18, paragraph 1, letter. c) of Law 30 December 2010, n. 240;
- n) to undertake to communicate any changes relating to the declarations made in the application;
- o) to have read the competition announcement and the Regulations for the activation of grants for carrying out University research activities available on the University website;
- p) to be physically fit to carry out the task;
- q) to have adequate knowledge of the Italian language (for foreign candidates);
- r) foreign language to discuss topics relating to the sector's subjects in the interview;
- s) not to have received any criminal convictions and not to have no ongoing criminal proceedings; otherwise, indicate the sentences reported, even if not definitive, the date of the sentence and the judicial authority that issued it; also indicate whether amnesty, judicial pardon, remission, pardon, non-mention, etc... has been granted and even if nothing appears on the criminal record. Criminal proceedings, even pending ones, must be indicated, whatever their nature. Foreign citizens must declare that they have not been criminally convicted in the state of their citizenship and in the Italian state;
- t) municipality of registration on the electoral lists or reasons for non-registration or cancellation from the same lists;
- u) position regarding military obligations (for Italian male citizens born after 1985);
- v) to have been/ not to have been holder of a grant(s) for carrying out research activities pursuant to art. 22 of Law no. 240/2010;
- w) to not have an ongoing research grant. If holder of a research grant, to be willing to renounce it in the event of this grant being awarded;
- x) to benefit/not to benefit from other scholarships awarded for any reason. In the case of being awarded a scholarship, to be willing to renounce it in the event of the award of this grant;
- y) to be in possession of the additional scientific qualification requirements required (art. 4 of the Notice).

*omissis*

Anything else established in the decree of 16 May 2024 prot. no. 122367 - rep. no. 802/2024 remains unchanged.

This decree is not subject to registration by the Court of Auditors, pursuant to art. 7 of law 9.5.1989, nr. 168.

Modena, 20 May 2024

**THE MANAGER**  
**(dottoressa Maria Raffaella INGROSSO)**  
**Digitally signed under the law "D.Lgs. N. 82/2005"**