

Rep. n.: 02/2021 Prot. n. 86/2021

Date: February 8, 2021

The English language version of the call does not have legal value in itself, and thus does not supersede the Italian version of the call (BANDO).

The integral version is available at the following links:

<http://host.uniroma3.it/uffici/ricerca/assegni-di-ricerca.aspx>

<http://matematicafisica.uniroma3.it/dipartimento/bandi-e-concorsi/bandi-per-assegni-di-ricerca/>

### Art.1

Pursuant to the “[Regolamento di Ateneo per gli assegni di Ricerca](#)” a public selection process is established to award ONE grant for temporary research fellowship (“*assegno di ricerca*”) for a period – renewable – of 12 (twelve) months in the Mathematics and Physics Department:

#### RESEARCH PROJECT:

*Search for Higgs boson pairs in the  $WWbb$  decay channel with one lepton in the final state*

The research program is centered on the analysis of the ATLAS experiment data collected during the Run-II data taking to search for Higgs boson pairs. The final state to analyse involves the decay of one of the Higgs boson to a bottom, anti-bottom pair and the second Higgs boson to a  $W^+ W^-$  pair. The two  $W$ 's decay to one lepton, one neutrino and a pair of quarks. The same final state is polluted by the large production of top - anti-top quark pairs, therefore the analysis needs to use artificial intelligence techniques in order to reach a good signal to background separation. The selected candidate will analyse data of the ATLAS experiment, implementing artificial intelligence algorithms and performing the statistical data analysis to extract a possible signal.

#### APPLICATION PROFILE

A degree in Physics and two years of experience in research (including possibly eff carried out during PhD courses) in elementary particle physics on topics similar to those listed in the research program are required. The interview may take place via Skype

**GROSS AMOUNT** (paid in monthly installments): € **24.000,00** comprehensive of all fees due by the Administration.

The allowances is subjected to:

- the provisions of the article 4 of Law 13/08/1984, n. 476 (fiscal treatment);
- the provisions of article 2, paragraphs 26 and following, of the law 08/08/1995, n. 335, as further amended (social security);
- the provided in article 1, paragraph 788 of Law 27/12/2006, n. 296, as further amended (sick leave);
- the provisions of the Decree of the Minister of Labour and Social Welfare 12/07/2007, published in the Official Gazette no. 247 of 23/10/2007 (maternity).

Apart from the cases provided for and regulated by the above provisions, it is possible to suspend the research activity for a pre-determined number of months. Suspensions are given by the Board of the Department; at the end of the suspension the “*assegno di ricerca*” will resume or will be permanently stopped.

In all cases of suspension the payment is immediately interrupted until the date of resumption of the activities, certified by the Head of the Department.

In the case of anticipate conclusion of the research activity, the monthly installment will be paid proportionally.

### Art. 2

To participate in the selection it is mandatory to have gained:

- a Master's Degree in Physics.
- a proven scientific and professional curriculum suitable for carrying out the research activity for which you are competing, possibly certified by the possession of additional research training qualifications or documented and suitable experience for research activity already carried out. Should the Master's Degree have been obtained abroad, the course must be declared equivalent, solely for selection purposes, by the Academic Senate of the University. The candidate must possess the required qualification within the deadline specified in paragraph 3, under penalty of exclusion.

### Art. 3

The signed and dated application form, compiled following the scheme available at the end of this Call (ANNEX A) must be addressed to the **Mathematics and Physics Department of Roma Tre University – Research Area**

- by ordinary e-mail to the address: [amm.matematicafisica@uniroma3.it](mailto:amm.matematicafisica@uniroma3.it) attaching a copy of a valid identity document

**MUST BE SUBMITTED** within the final deadline of, March 8, 2021; otherwise the applicant will be excluded.

Application must include:

- **Appropriate scientific and professional curriculum demonstrating aptitude for research activities;**
- **self declaration for the Degrees (ANNEX B);**
- (if any) **list of other titles and or previous scientific publications (ANNEX C).**

### Art. 4

The Committee will define the criteria of the selection before proceeding with the evaluation.

### Art. 5

1. The research grant cannot be awarded to students enrolled in undergraduate, Master, Ph.D. or medical specialization in Italy or abroad, and involves placement on unpaid leave or employee with public administration other than those referred to in point .3 below.

2. Participation in the selection is not allowed for spouses, relatives and akin up to and including the 4th degree of the:

- Teaching staff of the Department which has issued this notice;
- Rector;
- General Director;
- Members of the Board Directors.

3. Permanent employees of Universities, Research Institutes or public bodies, the National Institute for New Technologies, Energy and Sustainable Economic Development (ENEA), the Italian Space Agency (ASI) and institutions whose scientific specialization qualification have been recognized as

equivalent to a Ph.D pursuant paragraph, of Presidential Decree no. 382 of July 1980, cannot participate in the selection.

4. The research grant cannot be combined with any scholarships, except those awarded by national or foreign institutes to supplement research activities of said temporary research fellows with permanence abroad.
5. The grant for carrying out research activities is governed by a specific individual contract, based on the following criteria: flexibility in meeting the needs of the activity, continuity, time allocation (not sporadic), coordination with the overall activities of the Department, close relationship with the implementation of a research program, autonomous activity within the scope of the program and absence of pre-determined working hours.

#### Art. 6

For all matters not included here we refer to the laws and rules regarding the “[assegni di ricerca](#)”

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Roma, February 8, 2021

Rep. N. 02/2021

Head of Mathematics and Physics Department of Roma Tre University  
*Prof. Roberto Raimondi*

**ANNEX A**

**APPLICATION FORM**

Head of Mathematics and Physics Department of Roma Tre University

The undersigned(name and surname) ..... born  
in.....(.....)  
date....., place of residence..... (.....) post code .....

C. F. (fiscal code).....

address for the competition:

town.....( state.....) Street .....Post Code.....

Telephone number ..... Mobile Phone .....

E-mail .....

**ASKS**

to participate in the competition for the assignment of the grant for the research program titled

“Search for Higgs boson pairs in the WWbb decay channel with one lepton in the final state”

**Rep. n. 02/2021 Prot. n.86/2021** which will take place in the **Mathematics and Physics Department**

**DECLARES UNDER HIS/HER RESPONSIBILITY:**

- 1) Citizenship.....;
- 2) To have obtained the degree in..... obtained in date .....  
at the University of..... with the grade of .....
- 3) To have obtained the PhD in.....  
obtained in date ....., at the University of .....
- 4) To not receive any kind of other scholarships with the exception of those which are usefull to integrate, with trip abroad, the research activity. Or to give up the above scholarship if win the contest.
- 5) To not have received L.240/2010 research grants for a total period of more than 72 months.
- 6) To not be an official at the Universities , Astronomical Observatories , Astrophysical and Vesuvian , public bodies and institutions of research in art. 8 of D.P.C.M. 12/30/93 , 593 and subsequent amendments and supplements, ENEA and ASI.
- 7) To not have a degree of consanguinity or affinity up to the fourth degree , with a professor at the Department in which the research grantwill be carried out, and even with the Rector, the General Manager or a member of the Board of Governors.
- 8) To be aware of all the rules contained in the announcement.
- 9) To undertake to inform the University of any changes of their residence or address.

**Attached:**

- Personal declaration of graduation, indicating the title of the thesis discussed and the final mark. In the case of degree obtained abroad the title of the appropriate equivalence must be accompanied or to be submitted to the Department Council for recognizing the sole purpose insolvency - ANNEX B ;
- (possibly) Declaration attesting the possession of a PhD; in the case of PhD obtained abroad the title of the appropriate equivalence must be accompanied or to be submitted to the Department Council for recognizing the sole purpose insolvency - ANNEX B ;
- (possibly) Copies of publications and any other qualifications useful for the assessment of the Commission ;
- Detailed scientific and professional curriculum showing the suitability of the research activity to be carried out.

I authorize the Roma Tre University to the processing of personal data , in accordance with law . n . 196 of 30/06/03 .

Date, \_\_\_\_\_

\_\_\_\_\_  
(original signature)

**ANNEX B**

**DECLARATION SUBSTITUTE FOR CERTIFICATE PREPARED IN SIMPLE PAPER**  
(DPR 28/12/2000, n° 445 "Testo Unico delle disposizioni legislative e regolamentari in materia di documentazione amministrativa")

The undersigned..... (C. F. fiscal number.....)

born in..... in date....., address.....

..... telephone number ....., mobile phone .....,

e-mail ..... aware that false declarations are punishable under  
the Criminal Code and other rules in force

**DECLARES**

**1b. Please fill in this box if you obtained the degree from a non Italian University**

declares to have obtained the degree in

\_\_\_\_\_

obtained in date \_\_\_\_/\_\_\_\_/\_\_\_\_ at the University of \_\_\_\_\_

Faculty of \_\_\_\_\_, with the grade of \_\_\_\_/\_\_\_\_

**Please fill in this part only if you have already obtained a PhD**

**(optional)**

2. declares to have obtained the PhD in.....,

at the University of .....,

the PhD defense took place in date .....

the title of the PhD thesis is: .....

I authorize the Roma Tre University to the processing of personal data , in accordance with law . n . 196 of 30/06/03 .

Date, \_\_\_\_\_

\_\_\_\_\_ (original signature)

**Please attach a copy of an identification document, for example your passport**

ANNEX C

**DECLARATION SUBSTITUTE FOR CERTIFICATE PREPARED IN SIMPLE PAPER**  
(DPR 28/12/2000, n° 445 *“Testo Unico delle disposizioni legislative e regolamentari in materia di documentazione amministrativa”*)

The undersigned..... (fiscal number .....)  
born in..... (.....) in date....., address..... (.....)  
Street ....., telephone number ....., Mobile phone .....,  
e-mail ..... aware that false declarations are punishable under  
the Criminal Code and other rules in force

**(DECLARES THAT ALL THE COPIES OF THE TITLES, OF THE PUBLICATIONS, AND ANY OTHER  
QUALIFICATIONS ATTACHED TO THIS APPLICATION FORM ARE FULLY COMPLIANT WITH  
ORIGINAL.)**

I authorize the Roma Tre University to the processing of personal data , in accordance with law . n . 196 of 30/06/03 .

Date, \_\_\_\_\_

\_\_\_\_\_ (original signature)