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REQUEST FOR PARTICIPATION OF INTERNATIONAL PARTNER COUNTRY  
TO COST ACTION CA18108, QUANTUM GRAVITY PHENOMENOLOGY IN THE MULTI-MESSENGER  
APPROACH

### 1. 1. MANAGEMENT COMMITTEE AND Head Of Science Operations APPROVAL

The COST Action CA18108 Management Committee approved By Written Procedure on 14 May 2020, the request for a International Partner Country participation, based on scientific merits.

#### Name of International Partner Country

NAME	Federal University of Lavras
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COUNTRY	Brazil (BR)
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#### Name of representative to COST Action CA18108

DEPARTMENT	Physics Department
NAME	Dr larley Pereira Lobo
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Request validated by COST Association Science Officer Dr Ralph Stuebner

This request was reviewed by the COST Head Of Science Operations, and validated on 18 May 2020, based on the scientific merits.

## **2. PRESENTATION OF INTERNATIONAL PARTNER COUNTRY AND ITS REPRESENTATIVE**

Federal University of Lavras, founded in 1908, is located in the city of Lavras, state of Minas Gerais, Brazil. Its Physics Department presents consolidate research groups in Quantum Field Theory, Condensed Matter Physics, Complex Systems and Statistical Physics, besides Nanomaterials and Nanotechnology. Dr. Iarley Pereira Lobo holds a Ph.D. on Physics and Relativistic Astrophysics under the supervision of Prof. Giovanni Amelino-Camelia, at La Sapienza University of Rome. He is now a visiting scholar at the Physics Department, and is currently working in the Quantum Field Theory group aiming to enrich the relation between this area and Gravitation and Quantum Gravity Phenomenology.

## **3. BACKGROUND INFORMATION**

Along the past years, Federal University of Lavras has been pursuing the construction of new collaborations in promising areas of scientific research. Multi-messenger astronomy is one these areas at the edge of contemporary's scientific investigations and has great potential in deepening our understanding of the laws of nature. In this context, the COST Action CA18108 "Quantum Gravity Phenomenology in the Multi-messenger approach" is a great initiative in joining efforts of several institutions around the globe in the search for signals of the quantum nature of gravity. Also, joining this Action lies in efforts of internationalization of the Federal University of Lavras by promoting cooperation between local researchers and those from oversea institutions.

## **4. DESCRIPTION OF MUTUAL BENEFITS**

### **4.1 Benefits for COST and for the COST Action**

The participation of Dr. Iarley Pereira Lobo, representing the research group on Quantum Field Theory of the Physics Department of Federal University of Lavras, would be very positive for our Action. Dr. Pereira Lobo is an expert on geometric aspects of theories with curved momentum space, which have been studied as candidates for quantum gravity models. In particular, there is a very active research work about the definition of spacetime in these theories, one of the main topics of Dr. Pereira Lobo's work, which is of great phenomenological importance, since the experimental expectations on possible time delays occurring on cosmic messengers depend on a correct description of spacetime in these models. Dr. Pereria Lobo is a collaborator of several members in our Action and his participation would help to foster the collaborations between the physics community in Brazil and the European one.

### **4.2 Benefits for the International Partner Country**

The search for experimental evidences of the quantization of gravitational degrees of freedom constitutes one the most important and challenging ones in contemporary science. Brazil is one of the most prominent countries in promotion of science in the southern cone, and, in particular, it has a consolidate tradition in research lines of Gravity (Cosmology, Astrophysics, Modified Theories of Gravity) and Quantum Field Theory. Therefore its candidacy for participating in this Action is a very natural movement due to the importance and potential impact of the subject.

### **4.3 Brief description of targeted scientific activities, including Working Groups selected for cooperation**

Since my period working in Dr. Amelino-Camelia's group at La Sapienza University of Rome, I have been investigating geometrical aspects of emergent spacetimes, momentum spaces and their deformed symmetries from quantum gravity phenomenology

considerations; for instance Finsler and disformal geometries, curved momentum spaces and other effective energy-dependent spacetimes. For this reason, I am a candidate to be part of Group 1 “Theoretical frameworks for Quantum Gravity effects bellow Planck energy”, led by Dr. Pfeiffer and Dr. Gubitosi.

#### **5. ADDITIONAL COMMENTS / REMARKS**

Not required.