Beyond local quantum fields: non-commutative field theory and deformed symmetries

Fact Sheet

Project Information

BEYOND LOCAL QFT

Grant agreement ID: 236658

Project closed

Start date
15 September 2009

End date
14 September 2011

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
No data

EU contribution
€ 155 832,58

Coordinated by
UNIVERSITEIT UTRECHT
Netherlands

Objective

"Non-commutative quantum field theories and their associated deformed symmetries provide intriguing examples of models beyond the realm of standard local quantum field theory which attempt to introduce basic quantum features of the underlying space-time. The project will focus on a particular model of deformed space-time

symmetries, the kappa-Poincare algebra, which provides the prototypical example of non-commutative field theory exhibiting a ""built-in"" cut-off (Planckian) energy scale and modified energy-momentum dispersion relation. These features make the model particularly appealing from the perspective of extracting potential phenomenological predictions from it. The planned research will focus on developing consistent quantum field theoretic models based on kappa-deformed symmetries and exploring various contexts in which the new structures introduced lead to observable effects. This will be achieved through the study of of particle scattering in general interacting theories and how particle creation phenomena in non-trivial backgrounds are affected by the deformations. To obtain further insights on the general aspects of this and other similar models the researcher will address the issue of providing a rigorous definition of symmetry deformation within the abstract formulation of quantum field theory and will investigate the properties of 'analogue' statistical mechanics models which exhibit similar deformed symmetries. The fellowship will give the applicant the opportunity to return to Europe and to work at the ITP in Utrecht, an internationally renowned center for theoretical and high energy physics to carry out cutting-edge research at the interface of quantum gravity, high energy physics phenomenology, foundational aspects of quantum
field theory and mathematical physics."

Fields of science (EuroSciVoc)

natural sciences > physical sciences > quantum physics > **quantum field theory**

Keywords

Cosmology
Gravitation
Mathematical physics
Quantum field theory
Relativity
Statistical physics

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

FP7-PEOPLE-IEF-2008 - Marie Curie Action: "Intra-European Fellowships for Career Development"

Call for proposal

FP7-PEOPLE-IEF-2008
See other projects for this call

Funding Scheme

MC-IEF - Intra-European Fellowships (IEF)

Coordinator

UNIVERSITEIT UTRECHT

EU contribution

€ 155 832,58

Total cost

No data

Address

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Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation
Website
Participation in EU R&I programmes
HORIZON collaboration network

Last update: 1 August 2019

Permalink: https://cordis.europa.eu/project/id/236658