

Application for a:	Outgoing Scheme NEWFELPRO Fellowship for senior researcher
Proposal Acronym:	Spacetime QG LV GRay
Proposal Title:	Features of Space-time at Quantum Gravity Scales and Lorentz-Violating Effects on the Gamma-Ray Horizon
Research area(s):	Physics PHY
Research sub-disciplines:	Particle physics
Category of research:	basic
Duration in months:	16
Keywords:	Quantum Gravity, Space-time noncommutativity, Lorentz violation, Gamma Ray
Abstract:	<p>Obtaining a finite result for the 1-loop photon self energy, it would be an easy task to derive a meaningful dispersion relation for the photons, including the photon group velocity. It is to be stressed that the dispersion relation computed from the full-fledged field-theoretical model, would far surpass in relevance those obtained from heuristic models inspired by strings, being frequently in use heretofore. The extension of our research to non-abelian gauge theory models and models with SUSY is straightforward and that will be our next step. Moreover, note that several geometries dual to the non-commutative N=4 SUSY Yang-Mills theories were earlier proposed. This way space-time non-commutativity naturally enters AdS/CFT duality (correspondence). The profound structure of photon and neutrino self-energies in the two dimensional non-commutative quantum field theories suggests further study in the gauge-gravity duality framework.</p>
Does this proposal possess any of the sensitive ethical issues detailed in ethical issues table?	No