

## LNGS SEMINAR SERIES

# Dark Matter from Lorentz-violating theory of gravity

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We discuss the projectable Horava-Lifshitz model - the candidate for the theory of quantum gravity. At low energies, this model reduces to General Relativity and a fluid, which could play the role of the Dark Matter. We consider the branch of the projectable Horava-Lifshitz model which exhibits ghost instabilities in the infrared limit. It turns out that, due to the Lorentz violating structure of the model and to the presence of a finite strong coupling scale, the vacuum decay rate into photons is tiny in a wide range of phenomenologically acceptable parameters. The strong coupling scale, understood as a cutoff on ghosts' spatial momenta, can be raised up to 10 TeV. The latter is translated into the limit on the sound speed squared of the Dark Matter,  $c_s^2 < 10^{-20}$ .

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