

Massive white dwarfs and neutron stars in noncommutative geometry

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Over the past decades, various researchers have indirectly predicted over a dozen super-Chandrasekhar white dwarfs (white dwarfs which violate the Chandrasekhar mass-limit) from the luminosity observations of peculiar over-luminous type Ia supernovae. Similarly recent gravitational wave observations showed the possibility of existence of massive neutron stars. In my presentation, I will explain that phase space noncommutativity is one of the prominent possibilities to explain these peculiar phenomena. I will further show that the uncertainty in length scale depends both on the Planck scale and the Compton wavelength of the underlying particles, which is followed by Wigner's idea of the scale of uncertainty. This exploration leads to an indirect observational proof of noncommutativity.

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