JOINT TUFTS/MIT COSMOLOGY SEMINAR

Higher spin wave dark matter and polarized solitons

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I will first show that the effective non-relativistic theory of a gravitationally interacting, bosonic spin s field is described by a 2s+1 component Schrodinger-Poisson action. Then, I will show that the effective theory contains infinitely many 'classical' bound states (known as solitons) that are all degenerate in energy, and can have macroscopically large intrinsic spin! I will also discuss vector solitons in self-interacting Proca theory (without gravity), and show that only two of these solitons are now present in the spectrum of this theory, with their degeneracy also lifted. Such solitons can be probed through their gravitational and/or non-gravitational interactions, revealing the spin nature of the underlying field.

Tuesday, November 2, 2021, 2:30 pm

Zoom link will be distributed to joint cosmology seminar mailing list. If not subscribed see https://cosmos.phy.tufts.edu/mailman/listinfo/cosmology-seminar

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