

Abstract Submitted
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Scalar Field Dark Matter: Developing Galactic Simulations

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The matter we see in our universe accounts for less than 20 percent of all matter, and the rest is a type of matter that does not interact electromagnetically, called Dark Matter. We don't have much evidence for what Dark Matter is yet, but one promising model is as a scalar field. However, it is computationally expensive to numerically evolve the Klein Gordon equation, which describes scalar fields. One way of tackling this problem is to instead work with the Schrodinger equation, which is a non-relativistic approximation of a scalar field. We have been investigating whether this is a good approximation to make for Dark Matter, using codes that model Dark Matter on both a cosmic and galactic scale. Here we will discuss how we have been looking at modeling galactic Dark Matter halos, and how this has begun to shine light on possible issues with our calculations of Newtonian Gravity.

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