Abstract: Recently there has been significant interest in the claim that dark matter axions gravitationally thermalize and form a Bose-Einstein condensate with cosmologically long-range correlation. This has potential consequences for galactic scale observations. Alan Guth, Mark Hertzberg and I critically examined this claim. We point out that there is an essential difference between the thermalization and formation of a condensate due to repulsive interactions, which can indeed drive long-range order, and that due to attractive interactions, which can lead to localized Bose clumps (stars or solitons) that only exhibit short range correlation.

Bio: Chanda Prescod-Weinstein earned her PhD at the Perimeter Institute and University of Waterloo with advisors Lee Smolin and Niayesh Afshordi. After a brief stint at Goddard Space Flight Center, she came to MIT as an MLK Postdoctoral Fellow. For two years she worked with Ed Bertschinger and she is now a member of Alan Guth’s inflation group.

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