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Some Ideas about Cosmic Structure on the Smallest Scales

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The present day distribution of dark matter on scales smaller than the mass scale of dwarf galaxies contain a wealth of information on the early history of the early universe as well as the nature of dark matter. This distribution is not reflected in the distribution of gas and stars because the amplitude of dark matter inhomogeneities on these scales are constrained to have little effect on these baryonic tracers. Yet the remnants of the smallest scale dark matter structure surround us, perhaps in the form of dark matter “microhalos”. This talk will focus on two ideas related to the smallest scale dark matter structures:

- 1) what are the remnants of the gravitationally bound structures which may have existed during an early phase of matter domination
- 2) detecting the inevitable small inhomogeneities in ultra-light dark matter required by the uncertainty principle

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