Summary

WIMPs

- Originate in high energy accelerator ‘frontier’ new physics.
- Are associated with the weak interactions, so the WIMP mass is within a couple of orders of magnitude of 100 GeV/c^2.
- Are particle-like, if they are dark matter.
- Have De Broglie wavelengths of order the diameter of a nucleus.

Axions

- Originate as a by-product of the Peccei Quinn mechanism introduced to explain why strongly interacting hadrons are CP-symmetric in the low energy limit.
- Are associated with the strong interactions, so the axion mass is far lower than the WIMP mass, with its mass constrained by astrophysical observations and cosmological arguments. See a later lecture for further disussion
- Are wave-like, if they are dark matter.
- Have De Broglie wavelengths of order a hundred metres.