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Macroscopic Dark Matter Constraints from the Red Giant Branch Helium Flash

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Macroscopic dark matter candidates are large composite objects which escape standard direct detection constraints. Macros with substantial elastic scattering cross sections off visible matter can catalyze a variety of fusion processes in stars. We consider the effects of this process on Red Giant branch stars. We find that macros can ignite the helium core of these stars prematurely. We place constraints on the cross section of macroscopic dark matter with matter over the mass range 10^{17} g $< m < 10^{20}$ g.

Summary

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