

Towards the DARWIN Astroparticle Physics Observatory

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The DARWIN observatory will be the ultimate xenon-based detector for WIMP dark matter complemented by a rich science program of other rare event searches. It will operate 40t of natural liquid xenon in a time projection chamber, combining light- and charge-signal measurements for background reduction and an optimal energy resolution. We aim at reducing all background sources for the WIMP search to a level well below the ones induced by neutrinos.

These prerequisites of excellent TPC performance and high radio purity of materials and the xenon target requires intense R&D. We present the DARWIN project and its science, highlights from the ongoing R&D efforts and discuss the investigated options regarding TPC design and light sensors.

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