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The neutrinoless double beta decay experiment COBRA: Status and future plans¹

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The COBRA experiment uses Cadmium Zinc Telluride (CZT) room-temperature solid-state detectors to search for neutrinoless double beta decays of the isotope ^{116}Cd as well as for rare decays from several other Cd and Te isotopes. A prototype experiment is currently taking data in the Gran Sasso underground laboratory. In this contribution, recent results from the prototype will be presented. Furthermore, the on-going detector R&D will be described and two detector options for a large-scale experiment made of 420 kg of CZT detectors will be discussed. The first option uses “calorimetric coplanar grid detector units”. Alternatively, finely pixelated detectors may be used with pixel pitches of between 200 and 350 microns. The pixelated detectors would afford the possibility of tracking beta particles inside the detector and distinguishing them from background events.

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