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Status and Prospects for the EXO experiment

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EXO (Enriched Xenon Observatory) is a program to ultimately build a 10-ton class neutrino-less double-beta decay experiment using 136-Xe. EXO will perform a background-free experiment by combining the energy and position of the decay electrons with the identification of the final state nucleus (Ba) by means of high resolution atomic spectroscopy. I will describe the state of the R&D on the spectroscopic tagging of single Ba atoms extracted from a volume of liquid xenon and discuss the construction of the EXO-200 detector. EXO-200 will be the largest double-beta decay experiment ever built, employing 200 kg of xenon enriched to 80% in the isotope 136.