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The DRIFT directional WIMP detectors - improved limits and progress to scale-up

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The DRIFT (directional recoil identification from tracks) concept is currently the most sensitive technique being developed with capability to observe a galactic signature for WIMP dark matter by measuring the direction of WIMP-induced nuclear recoils in a gas. The collaboration is well advanced in the design and testing of a next generation experiment, DRIFT III, comprising up to 24 m³ target volume using CF₄/CS₂/O₂ gas, planned for installation in a large new underground laboratory complex currently being built at the Boulby underground site, UK. DRIFT III aims for a directional spin dependent sensitivity increase of >x100 compared to current DRIFT published values. We review technical progress in the development of DRIFT III, including use of O₂ minority carrier gas for fiducialisation. We outline the status of the new Boulby facility laboratories and upgrades.

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