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Status of the CYGNUS TPC Effort

I'll give a review of the CYGNUS proto-collaboration gas TPC effort. The CYGNUS concept here is to establish a world-wide array of gas TPCs ultimately capable of searching for WIMP dark matter with nuclear recoil directionality and hence reach below the so-called neutrino floor. Such technology also has the potential to distinguish nuclear recoils from electron recoils even in the low energy regime below ~10 keVee and hence also opens the prospect for low mass WIMP searches with particle identification capabilities. The physics motivation, recent progress and prospects for this concept will be presented including the status of the collaboration and a summary of recent R&D. A particular advance is the use of helium and hydrogen as target gas additives. This extends the sensitivity to low mass dark matter and opens the possibility of operation at atmospheric pressure.

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