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Direct Detection Searches for WIMPs

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We have seen remarkable progress in direct detection searches for dark matter in the form of weakly interacting particles or WIMPs. Existing experiments using diverse technologies have set convincing limits for WIMPs under the spin independent interaction framework and have ruled out much of the phase space suggested by supersymmetric models. Liquid xenon experiments have provided the best limits for masses above 6 GeV/c^2, with cryogenic detectors and bubble chambers setting the best limits for lighter mass WIMPs. In tension with the liquid xenon experiments are hints of signals and a claimed detection in the light WIMP mass sector. A number of theoretical ideas are consistent with light mass WIMPs, and a general approach, which probes all possible interactions between WIMPs and nucleons, stresses the need for a variety of target nuclei with the lowest possible thresholds to broadly cover the possibilities. As discussed extensively in P5 meetings, the down selection process for the second generation experiments (G2) will determine the progress over the next decade. As a community, we have asked the agencies for significant additional funds to be identified so that several G2 experiments can move forward and R&D on others continue. We need to continue this important search aggressively until we find WIMPs or reach the natural floor where the solar and atmospheric neutrinos become an irreducible background.