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The LDMX Trigger Scintillator system

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New theoretical developments have motivated "hidden sector"dark matter with mass below the proton mass. The Light Dark Matter Experiment (LDMX) will use an electron beam to produce dark matter in fixed-target collisions. A low current, high repetition rate (37.2MHz) electron beam extracted from SLAC's LCLS-II will provide LDMX with sufficient luminosity to explore many dark matter candidates. Using a novel detector design, LDMX is expected to definitively search for thermal relic dark matter with masses between 1 MeV and several hundred MeV. The LDMX trigger system will reduce the high repetition rate of 37.2MHz down to about 5 kHz. In order to identify signal events, a missing energy trigger will be used that will rely on knowledge of the number of incoming electrons. To determine the electron multiplicity, arrays of fast scintillators will be used. A strategy for the missing energy trigger will be described. An overview of the LDMX trigger scintillators and the current status of simulation studies will be presented.

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No

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