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Magnetic Field Effects in Amorphous Solids at Ultra Low Temperatures: Survey of Materials LIDIYA POLUKHINA, Stanford University, DANNA ROSENBERG, STEFAN LUGWIG, DOUGLAS OSHEROFF — A series of recent experiment has revealed a surprising magnetic field dependence of the dielectric constant in various multicomponent glasses at low temperatures. This dependence is not predicted by the two level system model of non-interacting tunneling centers in amorphous insulators. A rigorous theoretical explanation of the observed effects requires a systematic study of different glasses in a broad parameter range. We conduct measurements using ^3He immersion cell that contained 5 different materials. Dielectric properties of samples in a temperature range from 1K to 1 mK with an applied field up to 10 mT are investigated. We present the design of a ^3He immersion sample cell which will enable us to examine up to 6 materials simultaneously. We plan to investigate the dielectric properties of samples in a temperature range from 1 K down to 4 mK with an applied magnetic field up to 8 Tesla and frequencies ranging from 100 Hz to 100 KHz .

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