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Micromegas gain and stability in negative ion drift chamber MICHAEL DION, C.J. MARTOFF, MICHAEL HOSACK, Temple University — Drifting negative ions rather than electrons is a new operating mode for Time Projection Chambers (TPCs) and related gas detectors. Diffusion in these devices is then suppressed to the thermal limit in all three dimensions without magnetic field, and continues to fall with increasing drift field up to E/p values of several tens of V/cm*Torr. The stability at high E/p is also improved by the electronegative gas. Newer TPC designs incorporate micropattern detectors as gain elements, and our group has been testing GEMs and MicroMegas in negative ion gas mixtures. The present report describes significant differences in the stability and performance of GEM vs. Micromegas detectors operating in negative ion gas mixtures based on carbon disulfide.

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