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Studies of xenon gas purity for next generation detectors[1] ATTILA DOBI, University of Maryland — The next generation of neutrino and dark matter detectors will require large quantities of extremely pure liquid argon and xenon. These types of experiments measure purity using dedicated devices which are capable of detecting electronegative impurities at concentrations less than one part per billion in the liquid phase. On the other hand, the purifiers used by these experiments often operate solely on the gas phase. Gas phase purity has been more difficult to monitor, because the analysis technology (Atmospheric Pressure Ionization Mass Spectroscopy) is out of reach for most researchers. We describe here our development of a new, inexpensive technique for monitoring the purity of xenon in the gas phase. Using this method we have reached sensitivities of better than one part per billion. We have begun using our device to study the performance of a common xenon gas purifier, the SAES Monotorr zirconium getter. To date gaseous xenon purification data for the SAES noble gas purifier does not exist. Our method of purity measurement is promising and would be a cost effective option for experiments using ultra high purity xenon.

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