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Argon Kα Measurement Technique on DIII–D[1] R.T. SNIDER, N.H. BROOKS, General Atomics, N. BOGATU, Weizmann Institute — The injection of impurities into the divertor is a promising technique to reduce the heat flux to the divertor plates in tokamak reactors and thus reduce the consequent erosion of the plates. An important issue with this type of scheme is poisoning of the plasma core by the impurities introduced in the divertor region. Consequently, there is a desire to measure the concentration of the injected impurities in the core. Argon is a promising impurity for such studies but there are uncertainties in deducing its core concentration using standard spectroscopic instruments installed on DIII–D. We are installing X–ray Ross filters with an effective narrow band pass centered on the argon K_α line at 3.2 keV, on two of the existing X–ray arrays on DIII–D in order to help determine the argon concentration profiles. The argon concentration profiles can be determined with the use of an atomic physics model coupled with the radial profile of the k_α emission measured by the modified X–ray arrays and other available diagnostic measurements. A description of the Ross filter design and its implementation on the DIII–D X–ray system will be presented. Other applications of the argon k_α measurement technique on DIII–D will be discussed including run away electron measurements during disruptions.

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