

Mitigation of Tokamak Disruptions Using High-Pressure Gas Injection

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Abstract. High-pressure gas jet injection of neon and argon is shown to be a simple and robust method to mitigate the deleterious effects of disruptions on the DIII-D tokamak. The gas jet penetrates to the central plasma at its sonic velocity. The deposited species dissipates >95% of the plasma by radiation and substantially reduces mechanical stresses on the vessel caused by poloidal halo currents. The gas jet species charge distribution can include >50% fraction neutral species which inhibits runaway electrons. The favorable scaling of this technique to burning fusion plasmas is discussed.