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Progress in Disruption Mitigation on the HL-2A tokamak[1] YIPO ZHANG, YUNBO DONG, Southwestern Institute of Physics, D. MAZON, CEA, France, MIN XU, J. ZHANG, J.M. GAO, Southwestern Institute of Physics, X.L. ZOU, CEA, France, K. ZHANG, X.Y. BAI, W.L. ZHONG, C.C. CHEN, G.L. YUAN, X.Q. JI, Y.G. LI, YI LIU, Z.B. SHI, X.R. DUAN, Southwestern Institute of Physics — Mitigation of runaway current was successfully implemented with supersonic molecular beam injection (SMBI) during disruptions deliberately triggered by the massive gas injection (MGI) of argon. A toroidal alfvén eignmode (TAE) was observed during disruptions, which plays a favorable role in scattering runaway electrons, and hence, limiting the strength of runaway beam. It has been found that the runaway plateau is easy to obtain on the condition of high normalized magnetic fluctuation level(?B/BT), the runaway plateau is even invisible when ?B/BT the exceeds the threshold of about 7.810-4, indicating that this magnetic mode plays a scattering role on the RE beam strength. Runaway current caused by argon injection with MGI was successfully suppressed by SMBI with a number of injected helium atoms of about 1.01021. RE generation during disruptions has been successfully avoided for the first time by the laser blow-off (LBO)-seeded impurity. Metal impurities were injected into the plasma by LBO at 980 ms. With the impurity injection, strong magnetic fluctuation is excited. Plasma disruption was triggered by MGI at 990 ms. It can be observed that no runaway current plateau was formed during disruption. The measurements from a HXR camera show that almost all energetic electrons are lost under strong magnetic fluctuation induced by LBO.

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