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Radiation emission measurements during mitigated disruptions on ASDEX Upgrade UMAR SHEIKH, (1) EPFL, SPC, Switzerland, PIERRE DAVID, (2) MPI for Plasma Physics, Germany, ONDREJ FICKER, (3) IPP of the CAS, Czechia, MATTHIAS BERNERT, MATTHIAS DIBON, (2), BASIL DUVAL, (1), MARC MARASCHEK, GERGERLY PAPP, GABRIELLA PAUTASSO, (2), CARLO SOZZI, IFP, Italy, ASDEX UPGRADE TEAM, THE EUROFUSION MST1 TEAM — Disruption mitigation remains a critical, unresolved, issue for ITER and accurate quantification of possible mitigation efficiency is proving difficult. Insufficient diagnostic coverage and analyses can generate false trends with unacceptably large uncertainties. ASDEX Upgrade (AUG) is uniquely equipped with massive gas injection valves in several toroidal and poloidal locations. From the high resolution bolometer and AXUV diode arrays, the radiation emission profile was inferred at varying toroidal distances from several injection locations. A single fan of sensors was chosen, to mimic systems used on other tokamaks equipped with a shattered pellet injector, and then compared to measurements from the complete set of sensors available. The resulting radiated energy fraction calculated from several inversion techniques varied by up to a factor of two with no constant ratio between the methods found. In contrast to JET observations, an increase in mitigation efficiency was observed for higher stored thermal energy fractions by all measurement techniques applied. Whilst massive gas injection is currently not considered for ITER mitigation, this study is applicable and pertinent to diagnostics and analysis techniques for the qualification of any disruption mitigation system.

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