Investigation of inversion methods for calculation of soft X-ray-based plasma position and its consistency with magnetically determined position on tokamaks[1] MARTIN IMRISEK, JAN MLYNAR, Institute of Plasma Physics of the CAS, Prague, Czech Republic, TOMAS ODSTRCIL, Max-Planck-Institut fr Plasmaphysik, Garching, Germany, MICHAL ODSTRCIL, University of Southampton, Southampton, United Kingdom, JAKUB SVOBODA, VIKTOR LOFFELMANN, Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Prague, Czech Republic, ONDREJ FICKER, VLADIMIR WEINZETTL, MARTIN HRON, RADOMIR PANEK, Institute of Plasma Physics of the CAS, Prague, Czech Republic, JET CONTRIBUTORS TEAM — Distribution of soft X-ray (SXR) radiation in tokamak plasma can be reconstructed via tomography from line integrated measurements. The center of mass of the SXR distribution gives reliable information about plasma position assuming a primary source being bremsstrahlung. The Tikhonov regularization constrained by the minimum Fisher information is often applied to solve the ill-posed and underdetermined plasma tomography. There are two ways how to apply this method on large datasets: to use either a rapid version that process all time slices simultaneously or linear inversion methods which provide the center of radiation as a scalar product of the measured data and precomputed weight vector. Here, robustness, reliability and computational time of various methods of the calculation of the center of SXR emissivity are compared on modeled and real data. Furthermore, consistency of the magnetic and SXR plasma position influenced by the plasma shape and impurities is analyzed and discussed.

Martin Imrisek
Institute of Plasma Physics of the CAS, Prague, Czech Republic

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