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Charge Exchange Recombination Spectroscopy (CXRS) diagnostic system design for the ion temperature profile measurements at ITER.

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Charge Exchange Recombination Spectroscopy (CXRS) diagnostic with use of diagnostic or heating beams of atoms is widely used practically in all modern tokamaks. This technique is utilized for a wide variety of measurements in the plasma edge and core, including ion temperature (via Doppler broadening of intrinsic impurity lines, which are efficiently populated by charge exchange from beam atoms), plasma rotation (via Doppler shift of the same impu¬rity lines), and impurity density profile information (via quantitative spectroscopy of the impurity line intensities). One of the major advantages of CXRS diagnostic is the ability to carry out local measurements of the plasma parameters. It is happened due to the fact that the detected active signal is coming from the intersection area of viewchord and injected atomic beam. Therefore, CXRS diagnostic allow to measured ion temperature profile with the very good spatial resolution.
The general conception and detail description of active CXRS diagnostic system for ITER are stated in the current report. Measurement requirements and technical descriptions of the spectroscopic equipment prototypes for ITER are stated in the current report.

Presenter: VADIM, Serov (TRINITI)

Session Classification: Poster Session: presentation of posters