Abstract Submitted
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Neonlike tungsten ions as probes of ion and electron temperature and bulk motion of ITER plasmas[1] PETER BEIERSDORFER, J. CLEMENTSON, M.-F. GU, Y. PODPALY, LLNL, M. BITTER, K.W. HILL, PPPL, A. SAFRONOVA, U. SAFRONOVA, UNR — The core ion temperature of ITER plasmas will likely be derived from the thermal Doppler broadening of x-ray lines emitted by highly charged trace elements and recorded by an array of crystal spectrometers. Although it has been suggested to seed the plasma with krypton for this purpose, we show that the emission of neonlike tungsten provides several important advantages, especially if tungsten is already a plasma constituent due to its use in the divertor region. The relevant tungsten lines have wavelengths that are readily analyzed by x-ray crystals and fall into a region where existing detectors have high quantum efficiency. Moreover, the abundance of neonlike W^{64+} peaks for the core electron temperatures expected. We will present both theoretical studies and experimental results of some of the relevant tungsten x-ray emission, including crystal spectrometer measurements of neonlike tungsten confined and excited in an electron beam ion trap.

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