

Abstract Submitted  
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**An Alternative Optical Concept for Electron Cyclotron Emission Imaging (ECEI)**<sup>1</sup> J. LIU, UC Berkeley, T. MILBOURNE, College of William and Mary, M. BITTER, C. KUNG, A. DOMINGUEZ, P.C. EFTHIMION, G.J. KRAMER, S. KUBOTA, PPPL, H. PARK, Pohang Univ of Sci and Tech — The implementation of the recently developed ECEI systems on tokamak experiments has revolutionized the diagnosis of MHD activities and significantly improved our understanding of instabilities, which lead to disruptions. It is therefore desirable to also have an ECEI system on ITER. However, the large size of the optical components of the presently used ECEI systems, which include up to ten, 1 m high, cylindrical lenses and require access ports of the size of a manhole, preclude the implementation of such an ECEI system on ITER. This paper describes a new optical ECEI concept that employs a single spherical mirror as the only optical component and exploits the astigmatism of such a mirror to produce an image with one-dimensional spatial resolution on the detector. Since it would only require a thin slit as the viewing port to the plasma, it would thereby make the implementation of an ECEI system on ITER feasible. The results obtained from ongoing proof-of-principle experiments with a 140 GHz microwave system will be presented.

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