

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

An Alternative Optical Concept for Electron Cyclotron Emission Imaging (ECEI)¹ JASON LIU, UC Berkeley, JUNE-EOK LEEM, Postech University, MANFRED BITTER, PPPL, BURKHARD PLAUM, Stuttgart University, WOCHANG LEE, HYEON PARK, Unist University, GUNSU YUN, Postech University, WALTER KASPAREK, Stuttgart University, UC BERKELEY TEAM, PPPL TEAM, POSTECH UNIV., UNIST UNIV. COLLABORATION, STUTTGART UNIVERSITY TEAM — The implementation of advanced ECEI systems on tokamak experiments has revolutionized the diagnosis of MHD activities and improved our understanding of instabilities, which lead to disruptions. It is therefore desirable to have an ECEI system on ITER. However, present ECEI systems require large access ports and employ cumbersome optical components that have, up to now, precluded the implementation of such an ECEI system on ITER. This poster describes an alternative optical ECEI concept that utilizes a single spherical mirror as the primary optical component and exploits the astigmatism of such a mirror to produce an image of the radiating plasma with one-dimensional spatial resolution on the detector. Since this alternative approach would only require a thin slit as the viewing port to the plasma, it would make the implementation of an ECEI system on ITER feasible. Experimental results from laboratory characterization of this optical system are presented and compared to numerically simulated results. Possible approaches to implementing this ECEI system on ITER are also discussed.

¹We gratefully acknowledge the support of this work by the US Department of Energy Contract No. DE-AC02-09CH-11466 and Korean NRF Contract No. 20120005920.

Jason Liu
UC Berkeley

Date submitted: 10 Jul 2014

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