

Abstract Submitted
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Initial design of visible/IR camera optics for upper ports of ITER¹ C.J. LASNIER, L.G. SEPPALA, K. MORRIS, M.E. FENSTERMACHER, M. GROTH, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM — We show an initial optical design for the visible/IR camera systems that are a US responsibility for 6 of the ITER upper ports. Optics are enclosed in a tube with an entrance aperture through the blanket shield module. An aspheric collection mirror sends light to a flat mirror that redirects the beam along the port tube. Dogleg mirrors provide a jog in the beam, allowing for neutron shielding. The beam is spatially split into visible and IR beams inside the port flange, for separate vacuum windows. Spatial resolution is diffraction-limited by the aperture, which in turn depends on the size of the optics allowed in the port plug. For a view of the entire outer divertor plate with no intermediate focusing optics in the port tube, the spatial resolution is poorer than the specified 3mm. We show the resolution advantages of reducing the field of view and of adding a lens in the port plug.

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