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Matthew Ando* (mando@uiuc.edu), Department of Mathematics, University of Illinois, 1409 W Green St, Urbana, IL 61801, and **Andrew Blumberg**, **David Gepner** and **Hisham Sati**.

Twisted Umkehr maps.

Minasian-Moore and Witten proposed that D-brane charges take their values in K-theory. Freed and Witten studied the case that the D-brane charge takes its value in twisted K-theory. We locate this twisted K-theory construction in stable homotopy theory, which enables us to describe the analogue for elliptic cohomology. Motivated by a suggestion of Wang, we explain that a direct analogue of the Freed-Witten argument suggests that M-brane charges may take their values in twisted elliptic cohomology. (Received January 27, 2009)