

Abstract Submitted  
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**A Controlled Study of Stereoscopic Virtual Reality in Freshman Electrodynamics**<sup>1</sup> JOSEPH SMITH, CHRIS PORTER, CHRIS ORBAN, Ohio State University — Virtual reality (VR) has long promised to revolutionize education, but thus far it has been difficult to perform large studies to determine best practices. Part of the reason for this is the prohibitive cost of immersive VR headsets or caves. This has changed with the advent of smartphone-based VR (such as Google Cardboard), which allows students to use smartphones and inexpensive plastic or cardboard viewers to enjoy stereoscopic VR simulations. We have completed the largest-ever such study on 1,189 students enrolled in calculus-based freshman physics at The Ohio State University. The study has covered several areas in electricity and magnetism including electric fields, Gauss's Law, and magnetic fields, as well as comparing different presentations of material through either VR, video, WebGL, or static images. Data have been collected through pre-post assessment, as well as monitoring perspective tracking within the VR environment. In this talk we present an overview of findings.

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