

Belle2VR - A Virtual Reality Visualization of Subatomic Particle Physics

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I describe a novel interactive virtual reality visualization of subatomic particle physics, designed as an educational tool for learning about and exploring the subatomic particle collision events of the Belle II experiment. The visualization is designed for untethered, locomotive virtual reality, allowing multiple simultaneous users to walk naturally through a virtual model of the Belle II detector and interact with and gather information about the particles that result from electron-positron collisions in the SuperKEKB accelerator. Belle2VR displays the detailed GEANT4-simulated history of each collision event superimposed on the complete detector geometry; the user can move freely through the scalable detector geometry and manipulate the history timeline with handheld controllers. Developed by an interdisciplinary team of researchers in physics, education, and virtual environments, the simulation will be integrated into the undergraduate physics curriculum at Virginia Tech. I describe the tool, including visualization features and design decisions, and outline our plans for future development.

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