Geophysical Research Abstracts
Vol. 21, EGU2019-12701, 2019
EGU General Assembly 2019

Virtual Planetarium - Space Physics in Virtual Reality

Markku Alho (1), Esa Kallio (1), Riku Järvinen (1,2)

(1) Aalto University, School of Electrical Engineering, Department of Electronics and Nanoengineering, Aalto, Finland (markku.alho@aalto.fi), (2) Finnish Meteorological Institute, Helsinki, Finland

The novel and accessible consumer-grade virtual and augmented reality technologies enable immersive experiences in three-dimensional space. Taking advantage of these technologies, we have developed outreach and education software for both virtual and augmented reality environments to engage with both the public and students on space physics topics.

The immersive technologies are especially suited for exploration of three-dimensional structures, such as plasma flows and magnetic field in space physics. The Aalto Virtual Planetarium demonstrates space research activities that involve Aalto University, including: visualizations of plasma physics simulations of the Sun and inner Solar System bodies (presently: Mercury, Venus, Earth and the comet 67P/Churyumov-Gerasimenko); space probes and missions (Rosetta, BepiColombo, Suomi100); heliospheric structure; and the Solar System to scale. The user can move and scale freely in the Solar System, from towering over the ecliptic down to visiting the Philae lander in 1:1 scale on the surface of 67P. Pre-set tour points with virtual posters provide descriptions of objects and phenomena in their natural context.

As current virtual reality experiences limit the number of simultaneous users to one, classroom use is limited. An augmented reality application prototype for smartphones and tablets/PCs is described. The application enables both the lecturer and the students to simultaneously navigate a 3D-model of the subject, with the lecturer's smart device functioning also as a 3D pointer.

See http://space.aalto.fi/software/ for further details.