

Virtual tours to the KATRIN experiment

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The Karlsruhe TRitium Neutrino (KATRIN) experiment performs a model-independent measurement of the electron neutrino mass with a design sensitivity of 0.2 eV (90% CL) after three full years of measurement time. KATRIN measures near the endpoint of the tritium beta spectrum, using the MAC-E filter principle by virtue of its 70 m long beamline. Its technological challenges include the high-luminosity tritium source, the cryogenic pumping section and the 20 m long ultra-high vacuum vessel of the main spectrometer.

Guided tours to the KATRIN beamline with supporting presentations are frequently offered to make the experiment, astroparticle physics and scientific research in general accessible to the public and students in particular. However, the on-site access is limited by the operation of high voltage and magnets, safety regulations for the tritium laboratory and the ongoing pandemic. This fuelled the development of three virtual presentation tools:

a 40-minute-long video tour with live commentary via zoom was created using cellphone-made footage of the beamline and archive footage of the transport and commissioning of its key components;

a 3D panorama of five locations at the beamline for virtual reality headsets or browsers providing a live-action guide or free exploration was developed with the NaWik (National Institute for Science Communication);

and a browser interface for a low-poly model of the full beamline is work-in-progress.

In this talk, we will present all three tools and their making, including first results of the NaWik-research on the knowledge transfer potential of the 3D panorama.

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KATRIN; NaWik; KIT; Netzwerk Teilchenwelt; Neutrino; Neutrinomass; virtual tour; outreach; web interface; 3D panorama; science in presentations; self-made video; low-poly; knowledge transfer; students

Collaboration

other Collaboration

Subcategory

Outreach and Education

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