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Gamma and radon measurements in the Huguenot tunnel for the PAUL project

The PAUL project has made significant progress toward planning and designing an underground laboratory to be constructed during the upgrade of the Huguenot Road Tunnel near Paarl in the Western Cape, South Africa. Measurements of muon-flux suppression in the tunnel—critical to demonstrating reduced cosmic-ray backgrounds—will be presented in a separate contribution to this conference. Here, we report on measurements of the gamma-ray background and radon concentrations, which are also crucial for assessing the site's suitability for low-background experiments.

This presentation summarizes radon monitoring results, gamma-ray spectra measured in the tunnel, and the concentrations of naturally occurring radionuclides in the surrounding rock. Measurement methods and results will be described, with emphasis on implications for background mitigation and for the design of the planned underground laboratory.

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