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New low-background underground facility in Poland - Książ Castle

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Książ Castle is located in the Lower Silesian Voivodeship in the south-western Poland. During the Second World War several tunnels were excavated in the castle hill. They are located 50 m below the courtyard of the castle and 350 m above sea level.

In 1968 the Geophysical Observatory of the Institute of Geophysics of the Polish Academy of Sciences was established in the tunnels. At the end of the last century, the Geodynamic Laboratory of the Space Research Center of the Polish Academy of Sciences was created in Książ as well.

This year in one of the tunnels we constructed a new facility, which will host the low-background gamma spectrometers devoted to material screening carried out in the frame of rare event searches. The new laboratory is already equipped with electricity (with 4 UPS units), internet connection, video cameras, oxygen level monitors (2 sensors, indoor/outdoor alarms), and continuous monitoring of the temperature, pressure, and humidity of the air. Portable LN2 generator will be installed soon.

So far, the laboratory background has been characterized by measuring the muon flux (~40 times lower compared to the surface), the 222Rn concentration in the building and outside (nearby tunnels), the thermal neuron flux and the gamma ray flux. The results of these measurements will be presented along with plans for the future installation of gamma spectrometers and other equipment.

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