

TECHNICAL CHARACTERIZATION OF CALLIOLAB, THE NEW UNDERGROUND LABORATORY FOR PHYSICS RESEARCH IN PYHÄSALMI MINE

J. Joutsenvaara¹, T. Enqvist¹, V. Isoherranen¹, P. Jalas¹, J. Kutuniva¹, P. Kuusiniemi¹, J. Maalampi², R. Mäkeläinen³ and K. Luukkonen³

1. University of Oulu, Oulu Southern Institute, P.O. Box 80000, FIN-90014
2. University of Jyväskylä, P.O. Box 35, FIN-40014
3. First Quantum Minerals, Pyhäsalmi mine, PL 51, FIN-86801

email: jari.joutsenvaara@oulu.fi

The development of the infrastructure for scientific work in the Pyhäsalmi mine is currently administered under the *Calliolab* project, which is managed by a consortium of the Universities of Oulu and Jyväskylä and regional organizations. A new laboratory has been developed in one of the tunnels at 1430 m depth in Pyhäsalmi mine. At this depth the cosmic-ray muon flux is attenuated down to one ppm compared to that on the surface, making the new laboratory an excellent location to conduct astro-particle physics research and material testing, which require ultra-low cosmic-ray background environment.

The floor area of the new laboratory, is currently 120 m² and the average height is 9 m providing the volume of 1080 m³ for working space. The laboratory is located 400 m from the main service level of the Pyhäsalmi mine, which is accessible with an elevator from the surface. The laboratory is also connected to the 11 km long maintenance road and it is accessible with a truck.

In this presentation we discuss the current status of Calliolab and its technical characterization, such as radon and other radiation background monitoring, ventilation, electricity and the isolation of the laboratory from mining operations. We also review the main results from the FP7 design study for utilizing the mine for major neutrino physics experiments.