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R&D on nuclear emulsion detectors for muon radiography of large objects

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Nowadays, there is renewed interest on nuclear emulsions, one of the oldest particle detectors used in high energy physics, due to their unbeatably high spatial resolution of 50nm and angular resolution of the order of 1 mrad. Emulsion films combine detector and data storage capabilities, don't require electric power and are mechanically robust. This makes them suitable and attractive for muon radiography of large objects such as mountains, glaciers, volcanoes, etc. LHEP in Bern is on of the largest emulsion scanning laboratories in the world, where 6 state-of-the-art high speed automatic scanning microscopes are installed and routinely operating. We are developing a new type of detector capable of withstanding field environmental conditions, and providing high resolution 3D images of hidden geological structures. A dedicated software is also being implemented to convert particle data into a density map. We will report about the status and perspectives of this activity.