

Muography applied to nuclear waste storage sites

Raffaello D'Alessandro^{1,2}

on behalf of the MURAVES collaboration

Department of Physics, University of Florence, Italy¹

INFN-Firenze, Italy²

Legacy storage sites for nuclear waste can pose a serious environmental problem. In fact, since certain sites date from the middle of the last century when safety protocols had not been properly established and strict bookkeeping was not enforced, a situation has evolved where the content of storage silos is basically known only within a large uncertainty both on quantity and quality.

At the same time maintenance work on old storage structures is becoming ever more urgent and yet this work requires exactly that information which is now lacking on the type of waste that was stored inside.

Because of the difficulty in accessing the storage silos and the near impossibility of making visual inspections inside, techniques have to be developed which can determine the presence of heavy elements (i.e. uranium) within the structures.

Muography is a very promising technique which could allow the survey of previously inaccessible structures. We have begun an evaluation performing feasibility studies using simulations based on real case scenarios. This talk will outline the storage site scenarios and then present some of the results obtained from the simulations using the framework developed by our group.