Poster session 1 - Monday 4 July

P1.082 **Antineutrino monitoring of spent nuclear fuel**

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As civilian uses of nuclear energy are experiencing a renaissance in many countries worldwide, the management of highly radioactive nuclear waste is becoming a more and more pressing issue. We explore neutrino detectors as a tool for monitoring and safeguarding nuclear waste material. In comparison to the monitoring of nuclear power plants using neutrino detectors, this proposal was not studied in the literature.

We compute the flux and spectrum of neutrinos emitted by spent nuclear fuel elements as a function of time and we illustrate the usefulness of neutrino detectors in several benchmark scenarios. In particular, we consider possible application of neutrino detectors at dry cask storage facilities where one can reverify the stored amount of nuclear waste with neutrinos. We also consider neutrino detectors as a tool in locating exact positions of underground radioactive sources in order to probe potential leaking from the tanks. In addition, we also discuss the usefulness of neutrino detectors at long-term storage facilities.