Executive summary

Simulations and background estimates for the DAMIC-M experiment

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This poster discusses the detector simulations carried out for the DAMIC-M experiment and the corresponding background estimates. The obtained results are used to drive the detector design and the material selection and handling. The aim is to achieve the required background level of a fraction of decays/kev/kg/day [d.r.u]. Different radioactive isotopes are simulated via Geant4 in the bulk of all the detector components. Simulations revealed that the major contributors to the background are the copper holder and the cables and that it is crucial to control and reduce the exposure time to cosmic rays of the electro-formed copper components. Pivotal to better background evaluations is also having precise measurements of the isotope activities. Thus, a screening campaign is scheduled for all the detector materials. The DAMIC-M design is still under development and it will be finalized soon together with the corresponding simulations.

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