

A new research program for ground-based space radiobiology in Europe

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Space radiation has been long acknowledged as a potential showstopper for long duration manned interplanetary missions. Our knowledge of biological effects of cosmic radiation in deep space is almost exclusively derived from ground-based accelerator experiments with heavy ions in animal or in vitro models. In an effort to gain more information on space radiation risk and to develop countermeasures, NASA started several years ago a Space Radiation Health Program, which is currently supporting biological experiments performed at the Brookhaven National Laboratory (Upton, NY). Accelerator-based radiobiology research in the field of space radiation research is also under way in Russia and Japan.

The European Space Agency (ESA) has recently established an ambitious exploration program (AURORA), and within this program it has been decided to start a space radiation research program. Europe has a wide tradition in radiobiology research at accelerators, generally focussing on charged-particle cancer therapy. This expertise can be adapted to address the issue of space radiation risk.

To support research in this field in Europe, ESA issued in 2005 a call for tender for a preliminary study of investigations on biological effects of space radiation (IBER). This study will prepare future ESA supported-activities in space radiation research by selecting the best European accelerator facilities to be targeted for cooperation, and by drafting a roadmap for future research activities. The roadmap will include a prioritisation of research topics, and a detailed proposal for experimental campaigns for the following 5-10 years.

The IBER contract was awarded in February 2006, and the final report of the team will be produced by the end of this year. More information about the IBER activity can be found on the webpage: <http://biofisica.na.infn.it/IBER>