

Editor's Note

This issue is devoted to the article by Adam Bernstein and colleagues at the Lawrence Livermore National Laboratory, Sandia National Laboratories, Los Alamos National Laboratory, Argonne National Laboratory, University of Hawaii, and University of California. The article presents a comprehensive and definitive overview of the potential nuclear arms control applications of antineutrino detectors. The first principal application discussed is the use of antineutrino detection to monitor nuclear reactor operations. At very short detection distances, such detection could monitor the power output of a reactor and by so doing enhance safeguards to ensure that plutonium production does not go unobserved. At longer distances, it is possible that the use of antineutrino detection could discover undeclared operation of a nuclear reactor. A second application would be to detect nuclear explosions at the kiloton level, although such use would require detector masses several times greater than the present state of the art.