The r-process element abundance with a realistic fission fragment mass distribution


Advanced Science Research Center, JAEA Tokai, Naka, Ibaraki 319-1195, Japan
bDepartment of Physics, Konan University, 8-9-1 Okamoto, Kobe 658-8501, Japan
cDepartment of Pure and Applied Physics, Kansai University, Suita, Osaka 564-8680, Japan
dSenior High School of Waseda University, Tokyo, Japan
*Numazu College of Technology, Oska 360, Numazu 411-8581, Japan
fNational Astronomical Observatory, 2-21-1 Osawa, Mitaka, Tokyo 181-8588, Japan
gDepartment of Astronomy and Astrophysics, University of Chicago, USA
hGUSA Tokyo, Japan
iUniversity of Tokyo, Japan

Abstract

Effect of the β-delayed fission in r-process abundance is investigated. The data base for the fission fragment mass distribution used in the r-process network calculation is constructed based on the 2-center shell model and Langevin equation. The β-decay rates (no emissive, neutron emission and β-delayed fission) are also newly calculated with the gross theory. The differences appeared in the final element abundance calculated with and without fission process are demonstrated and the mass region modified by the fission products is presented.