Enrichment of r-process elements in dwarf spheroidal galaxies with chemical and dynamical evolution model YUTAKA HIRAI, The University of Tokyo, YUHRI ISHIMARU, International Christian University, TAKAYUKI R. SAITOH, Tokyo Institute of Technology, MICHIKO S. FUJII, National Astronomical Observatory of Japan, TOSHITAKA KAJINO, National Astronomical Observatory of Japan; The University of Tokyo — Recent astronomical observations show large dispersion in relative abundance ratio of Eu to Fe ([Eu/Fe]) of metal-poor stars. While these stars provide clues to reveal galaxy formation, their chemical compositions suggest the site(s) of r-process must be in specific objects. Galaxy formation strongly depends on dynamical evolution process. In addition, stellar nucleosynthesis must be considered to decide the origin of r-process elements. It is thus important to calculate dynamical evolution of galaxies as well as chemical evolution to understand galaxy formation and evolution process. In this study, we construct a new chemical and dynamical evolution model based on N-body/Smoothed Particle Hydrodynamics code ASURA, taking into account of feedback of energy and metals from supernovae (SNe) and neutron star mergers (NSM). We execute models corresponding to three dwarf spheroidal galaxies (dSphs); Sextans, Sculptor, and Fornax. We show that our models successfully reproduce observed metallicity distributions and mass-metallicity relation of dSphs. We also calculate enrichment of Eu in a galaxy, assuming r-process site as SNe or NSM. Comparing predicted [Eu/Fe] with observations of dSphs, we discuss the site of r-process through our model of galaxies.

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