

## JUSTIPEN TRAVEL REPORT FOR BRADLEY S. MEYER

I left September 16, 2008 from Clemson, SC to travel to Japan. I arrived in Tokyo on Sep. 17, 2008 and proceeded to the National Astronomical Observatory in Mitaka where I had several useful discussions with Prof. Taka Kajino and his group members on r-process nucleosynthesis. I also presented a seminar “How and where are the heavy elements synthesized in the Universe?” on Sep. 19. On Sep. 20, I traveled to Yamagata where I presented a talk “Mechanism of the r-Process and Implications for Its Astrophysical Site” at the Symposium “Supernovae and the r-process nucleosynthesis” of the Japanese Physical Society Meeting. In my talk, I emphasized the three regimes in which a system expanding from high temperature and density can attain a high enough neutron-to-seed ratio to produce the heaviest r-process elements. I think this talk helped focus the discussion of what environments can give rise to r-process nucleosynthesis. I also enjoyed the other talks in the symposium, which treated astronomical and nuclear aspects of the r-process and enjoyed discussions with Japanese colleagues. On Sep. 23, I traveled to Wako-shi, where I participated in the RIKEN Workshop “New Era of Nuclear Physics in the Cosmos—the r-process nucleosynthesis”. There I gave a talk entitled “Nuclear Data Needs for r-process Calculations” and participated in discussions about the experimental program at RIKEN. While measurements of nuclear properties on the r-process path are ultimately desirable, the experimental program I suggested as a good immediate target would be a systematic study of neutron-capture cross sections of zirconium isotopes from stable to unstable. Nuclear physicists at the workshop liked this idea as a means of studying reaction mechanisms while I liked the idea since these neutron-capture cross sections are important for isotopic signatures of molybdenum found in presolar SiC-X grains. At RIKEN, I also installed my library of nuclear network codes libnucnet on local computers, and I enjoyed discussions on supernovae and related nuclear physics topics with Drs. Yuko Motizuki and Tohru Motobayashi. We also discussed plans for future collaborations organized in part around libnucnet-based codes. On Sep. 29, I then traveled to Kobe where I gave a talk “ $^{176}\text{Lu}$  and its Importance in Stars and Cosmochemistry” at Konan University and engaged in discussions with Prof. H. Utsunomiya on possible experiments regarding the accelerated beta decay of  $^{176}\text{Lu}$ . I returned to Clemson on Oct. 2, 2008.

I would like to thank JUSTIPEN for funding for covering my travel to Japan and my stays in Yamagata and Wako-shi. In summary, the travel was extremely productive and enjoyable, and it laid some important ground work for future collaborations. I would like to thank Dr. Itagaki and others at RIKEN who made such excellent arrangements for me. I would also like to thank Sherry Lamb and Dr. David Dean at ORNL for their help in making my visit to Japan possible.