

Preface

NDM12, the 4th International Symposium on Neutrinos and Dark Matter in Nuclear Physics was held in June 11th—June 15th, 2012 at Nara, Japan,

Neutrinos and DM are fundamental elements of the universe, and key particles in particle, nuclear and astrophysics, and also in various scales of cosmic structure formation. They are studied in nuclei and their interactions with nuclei are crucial for particle and astrophysics and cosmology.

The NDM symposium was started to discuss current cross-disciplinary questions and perspectives on ν and DM studies in nuclei by bringing together researchers from particle & astro-nuclear physics and astronomy. The first one was NDM03, in June 2003 at Nara, organized by H. Ejiri and his colleagues of Osaka Phys. & RCNP and others. It was held as YS1, the first Yamada Symposium. The second NDM was NDM06, Sept. 2006 in Paris, organized by Serge Jullian, Dominique Lalanne, and their colleagues at Orsay and others, and the last one was NDM09, Aug -Sep 2009 in Madison, organized by Baha Balantekin, Kasten Heeger, and their colleagues at Madison and others.

Subjects discussed at NDM12 were: A. Solar, supernova and astrophysical neutrinos and their interactions with nuclei, and nucleosynthesis. B. Neutrinos in β and $\beta\beta$ decays and the nuclear matrix elements. C. Nuclear reactions and scatterings, and photon and lepton probes for nuclear weak/neutrino responses. D. Cosmological neutrinos and cosmic large scale structure. E. Dark matter search and dark matter interactions with nuclei. F. Dark matter in the universe and structure formation and related subjects.

The present proceedings include the preface, the scientific program, the abstracts and the ppt/pdf files of the 58 oral and 7 poster presentations, the participant list, and the group photo. 76 participants from 18 countries participated in NDM12. It is noted that about 1/3 of speakers and participants were young researchers including graduate students, and all enjoyed active discussions over generations.

On behalf of the organization committee, we would like to thank National Astronomy Observatory, Osaka University RCNP, Tokushima University AIS (Ms Ohara), Nara Prefecture, Nara Visitor Bureau (Mr Ueda), and Nara volunteer lady's group for their generous supports and helps.

July 19, 2012

NDM12 Chair H. Ejiri (RCNP) and T. Kajino (NAO)

