Contribution ID: **221** Type: **Oral**

Commissioning of new DC muon beam line, MuSIC-RCNP at Osaka University

Wednesday 19 October 2016 12:20 (20 minutes)

We have constructed a new DC muon beamline, MuSIC (MUon Science Innovative muon beam Channel) at Research Center for Nuclear Physics (RCNP), Osaka University. The MuSIC comprises the world's most efficient DC muon source using the first pion capture solenoid system and muon beam transport magnets from the solenoid end to an experimental port.
We are now commissioning the beamline and alreadyobtained in-flight decay and surface muon beams in 2015. The surface muon beam yield is about 10^4 muon/(sec·1μA proton beam) and the in-flight decay muon yield is 10^4 –10^5 muon/(sec·1μA proton beam). We also measured beam profiles and spin precession amplitudes to calculate spin polarization of the muon beam.
After the beamline commissioning, we are planning variety of scientific programs, especially for muonic X-ray measurements with negative muons for nuclear physics, chemistry, and astrophysics. Condensed matter physics with μSR measurements also will be carried out. A design of new experimental apparatus for the μSR measurements is now in progress.
In our presentation, we will introduce the MuSIC beamline including results of the beamline commissioning and the status of development of the μSR apparatus, and then we will discuss future prospects for the MuSIC-RCNP beamline.

Author: Dr TOMONO, Dai (Osaka University)

Co-authors: Mr NANBU, Akihiro (Osaka University); Prof. TANIGUCHI, Akihiro (Kyoto University Research Reactor Institute); Dr SATO, Akira (Osaka University); Mr YOSHIDA, Go (Osaka University); Dr SAKAMOTO, Hideyuki (Osaka University); Dr NINOMIYA, Kazuhiko (Osaka University); Dr TAKAHISA, Keiji (Research Center for Nuclear Physics, Osaka University); Prof. HATANAKA, Kichiji (Research Center for Nuclear Physics, Osaka University); Prof. IEIRI, Masaharu (KEK); Dr MINAKAWA, Michifumi (KEK); Prof. FUKUDA, Mitsuhiro (Research Center for Nuclear Physics, Osaka University); Dr STRASSER, Patrick (KEK); Prof. MORINOBU, Shunpei (Research Center for Nuclear Physics, Osaka University); Mr SAITO, Takeshi (University of Tokyo); Dr MATSUZAKI, Teiichiro (RIKEN Nishina Center); Dr HIGEMOTO, Wataru (Advanced Science Research Center, Japan Atomic Energy Agency); Prof. MIYAKE, Yasuhiro (KEK-IMSS, J-PARC MUSE); Prof. MORI, Yoshiharu (Kyoto University Research Reactor Institute); Dr KAWASHIMA, Yoshitaka (esearch Center for Nuclear Physics, Osaka University); Prof. KUNO, Yoshitaka (Osaka University); Mr NAKAZAWA, Yu (Osaka University); Prof. SHIMOMURA, koichiro (KEK IMSS)

Presenter: Dr TOMONO, Dai (Osaka University)

Session Classification: We - 2

Track Classification: Fundamental physics and precision experiments with muons, pions, neutrons, antiprotons, and other particles