

# KEK WNSC seminar

**Speaker: Prof. Philip M. Walker**

(University of Surrey)

**Title:** Isomers and shape coexistence in neutron-rich nuclei

\* The seminar will be given in *English*.

**Date:** From 13:30 on July 5th, 2017

**Place:** RIBF bldg. R201

## *Abstract*

The meta-stability of nuclear isomers leads to a variety of experimental opportunities [1], including applications such as controlled energy release and the possibility of gamma-ray lasers. Isomers can also serve as “stepping stones” to probe the structure of exotic nuclei – an aspect that is now opening up with the new generation of radioactive-beam facilities.

This talk will address nuclear structure issues that arise in the upper parts of the  $50 \leq Z \leq 82$  and  $82 \leq N \leq 126$  shells, where both proton and neutron Fermi levels are amongst prolate high- $K$  orbitals or oblate low- $K$  orbitals. The proton/neutron reinforcing shape-driving effects are predicted to give strong prolate-oblate shape coexistence, with collective oblate rotation being a favoured mode at high angular momentum. However, it seems likely that it will be the predicted high- $K$  isomers that are needed for experimental access. Both the theoretical and experimental situations will be discussed.

[1] G.D. Dracoulis, P.M. Walker and F.G. Kondev, Rep. Prog. Phys. 79 (2016) 076301.