

PEM029-01

Room:203

Time:May 24 14:15-14:30

## A Conceptual Design on Incorporation of WASAVIES to the Aviation Route Dose Calculation System

Hiroshi Yasuda<sup>1\*</sup>, Tatsuhiko Sato<sup>2</sup>, Ryuhō Kataoka<sup>3</sup>, Takao Kuwabara<sup>4</sup>, Seiji Yashiro<sup>5</sup>, Daikou Shiota<sup>6</sup>

<sup>1</sup>NIRS, <sup>2</sup>JAEA, <sup>3</sup>Tokyo Tech., <sup>4</sup>Univ. Delaware, <sup>5</sup>CUA, <sup>6</sup>RIKEN

The main task in the management of cosmic radiation exposure for aircraft crew is calculation of the aviation route doses based on the flight information. Since the source of exposure at aviation altitude normally comes from galactic cosmic rays (GCR) of which the dose level gradually changes along the 11-year solar cycle, it is possible to calculate the aviation dose using a monthly average value of solar magnetic potential and a flight plan given for each month. Whereas, in case that a short, significant increase of atmospheric radiation happened by the solar energetic particles (SEP) emitted with a large eruption on the solar surface, in-flight exposure should be evaluated with minute intervals according to the precise actual information on flight time and route, separated from the GCR exposure. More concretely, it is necessary to develop a software that can estimate the minute-interval change of global atmospheric dose rates for 0 to 13 km in altitude for 24 h after a GLE detection and can calculate automatically the aviation route dose for any flight operated during the respective time. As a step to achieve it, we are presenting the conceptual design of an application to calculate a short-term, precise aviation route dose by utilizing the Warning System of AVIation Exposure to SEP (WASAVIES).

Keywords: cosmic, radiation, aircraft, exposure, GLE, SPE