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**Neutronic and Safety Analysis of
KUCA Wet Core using LEU Fuel**

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ABSTRACT

The Kyoto University Critical Assembly (KUCA), at the Kyoto University Research Reactor Institute (KURRI), is a multi-core type critical assembly consisting of three independent cores: two dry cores and a wet core, for fundamental reactor physics studies and education purposes. The reactor is currently operating with HEU (93% enriched U-Al alloy) fuel, and is currently under progress for converting to LEU fuel under the US-Japan agreement and cooperation with U.S. Department of Energy (DOE), KURRI and AREVA NP – CERCA. The candidates for the LEU fuel has been investigated through joint feasibility studies between KURRI and ANL, and basic neutronic characteristics (criticality, neutron spectrum) has been hitherto published in various papers.

In this paper, results of detailed neutronic analysis as well as safety characteristics of the KUCA Wet core (C-core) using the LEU silicide fuel will be presented. The analysis will include discussions on possible extension of the experimental capabilities as well as optimization of the fuel fabrication needs (number of fuel plates) through various design options for the Wet core LEU silicide fuel.