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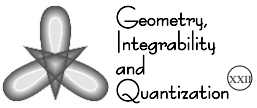

LIE THEORY SUFFICES TO RESOLVE THE LOCAL CLASSICAL PROBLEM OF TIME

EDWARD ANDERSON

Foundational Questions Institute (*fqXi*)*, PO Box 3655, 30031 Decatur, GA USA*

Abstract. The problem of time – a foundational question in quantum gravity – is due to conceptual gaps between GR and physics' other observationally-confirmed theories. Its multiple facets originated with Wheeler-DeWitt-Dirac over 50 years ago. They were subsequently classified by Kuchař-Isham, who argued that most of the problem is facet interferences and posed the question of how to order the facets. We show the local classical level facets are two copies of Lie theory with a Wheelerian two-way route therebetween. This solves facet ordering and facet interference. Closure by a Lie algorithm generalization of Dirac's algorithm is central.

MSC: 83C05, 83C45
Keywords: Dirac algorithm and generalizations, Lie theory, problem of time between GR and QM

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