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TIME-REVERSAL, LOOP-ANTILOOP SYMMETRY AND THE BESSEL EQUATION

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TIME-REVERSAL, LOOP-ANTILOOP SYMMETRY
AND THE BESSEL EQUATION

GIUSEPPE VITIELLO

Dipartimento di Fisica "E. R. Caianiello"
Università di Salerno, 84080 Salerno, Italy and
INFN, Gruppo Collegato di Salerno, Italy
vitiello@sa.infn.it

The Bessel equation is shown to be equivalent, under suitable transformations, to a system of two damped/amplified parametric oscillator equations, which have been used in the study of inflationary models of the Universe, thermal field theories and Chern-Simons gauge theories. The breakdown of loop-antiloop symmetry due to group contraction manifests itself as breaking of time-reversal symmetry. The relation between some infinite dimensional loop-algebras, such as the Virasoro-like algebra, and the Euclidean algebras e(2) and e(3) is also discussed.

Author: VITIELLO, Giuseppe (University of Salerno, Italy)

Presenter: VITIELLO, Giuseppe (University of Salerno, Italy)

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