

New Perspectives on the Kähler Calculus and Wave Functions

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Abstract. In 1960-1962, Kähler produced a generalization of Cartan's calculus of differential forms which he claimed to be a common language for relativity and quantum mechanics. It revolves around the "Kähler-Dirac (KD) equation", which plays a role in this calculus comparable to that of the equations of structure in geometry. Its reach is such that the input differential form needed to solve the relativistic hydrogen atom is just a very simple one among the possible inputs.

We show how Cartan's methods allow one to simplify or ignore many of Kähler's cumbersome formulas. We interpret the three series of indices in the components of this calculus and show a promising connection between the structure of its solutions to problems with symmetries and Schmeikal's algebraic representation of low energy quarks.

Keywords. Kähler, Differential forms, Schmeikal's quarks.

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