

Celebrating the Choi-Jamiołkowski Isomorphism



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The Choi-Jamiołkowski Isomorphism: when Maths meets Physics

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I discuss the interplay between Physics and Mathematics, from a personal perspective, in the light of the celebrated Choi-Jamiołkowski Isomorphism. I argue that it is desirable that a physical law, when expressed in terms of a differential equation, should admit any initial conditions. Choi-Jamiołkowski isomorphism, complete positivity, correlations and entanglement form a facet pattern that defines the correct formulation of the dynamics of open quantum systems. A formulation that requires coordination and teamwork if all its ingredients are to be kept in perfect alignment.

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