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Uncertainty of Prebiotic Scenarios: The Case of the Non-Enzymatic Reverse Tricarboxylic Acid Cycle[1] DMITRY ZUBAREV, DMITRIJ RAPPOPORT, ALAN ASPURU-GUZIK, Harvard University — We consider the much discussed hypothesis of the primordial nature of the non-enzymatic reverse tricarboxylic acid (rTCA) cycle and describe a modeling approach that quantifies the uncertainty of this hypothesis due to the combinatorial aspect of the constituent chemical transformations. Our results suggest that a) rTCA cycle belongs to a degenerate optimum of auto-catalytic cycles, and b) the set of targets for the investigations of the origin of the common metabolic core should be significantly extended.

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Dmitry Zubarev
Harvard University

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