Abstract Submitted
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The Entangled Histories of Physics and Computation CESAR RODRIGUEZ, University of Texas, Austin — The history of physics and computation intertwine in a fascinating manner that is relevant to the field of quantum computation. This talk focuses of the interconnections between both by examining their rhyming philosophies, recurrent characters and common themes. Leibniz not only was one of the lead figures of calculus, but also left his footprint in physics and invented the concept of a universal computational language. This last idea was further developed by Boole, Russell, Hilbert and Gödel. Physicists such as Boltzmann and Maxwell also established the foundation of the field of information theory later developed by Shannon. The war efforts of von Neumann and Turing can be juxtaposed to the Manhattan Project. Professional and personal connections of these characters to the development of physics will be emphasized. Recently, new cryptographic developments lead to a reexamination of the fundamentals of quantum mechanics, while quantum computation is discovering a new perspective on the nature of information itself.

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