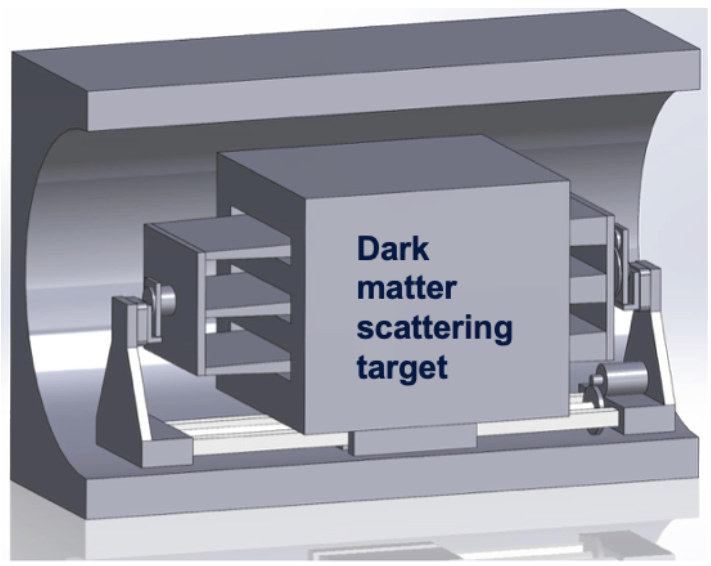
APC colloquium

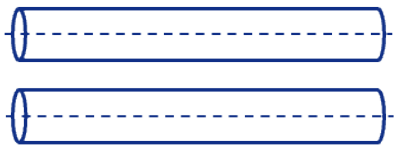
Wednesday, April 2nd at 11am

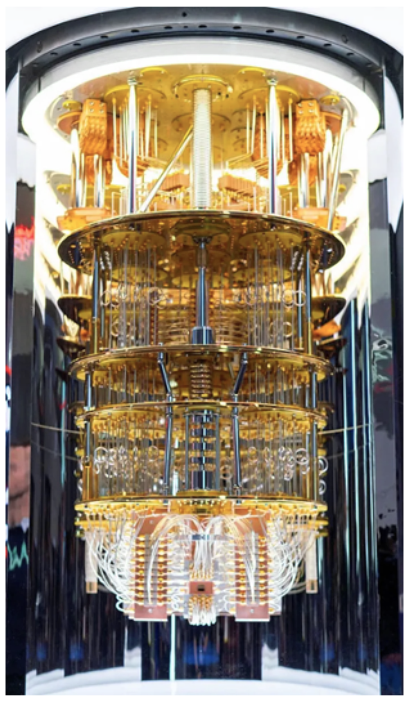
Room Pierre Gilles de Gennes

Aaron S. Chou

University of Chicago and Fermilab







Quantum Sensors for High Energy Physics

While Quantum 1.0 technologies have already been used to great effect in high energy physics applications such as rare event dark matter searches, the next generation of experiments will make use of new Quantum 2.0 sensing technologies such as squeezing and initial state preparation using non-Gaussian resources. Rudimentary qubit-based quantum processors are being deployed as the front end electronics to manipulate and detect signals at the single quantum level with readout noise far below the standard quantum limit of zero-point vacuum fluctuations. In this talk, I will give an overview of recent quantum sensing technologies being developed and the new science reach they enable in areas such as dark matter and gravitational wave detection.