

**Physics Colloquium
In person and Virtual**

**Prof. Edwin Barnes
(Physics, Virginia Tech)**

“Time Crystals and Quantum Computation”

Friday, Sept. 10, 2021

2:30pm—3:30pm

130 Hahn Hall North

Zoom link: <https://virginiatech.zoom.us/j/96084996911>

Quantum nonequilibrium phases of matter can exhibit a variety of phenomena that have no counterpart in equilibrium settings. One such phase, known as a discrete time crystal, arises when a periodically driven system spontaneously breaks discrete time-translation invariance. In this phase, the quantum many-body state becomes insensitive to disorder and driving errors, provided interactions are sufficiently strong. I will describe the history and main concepts behind time crystals and related phases, present new examples of such phases, and show how they can be used to improve the performance of quantum computational tasks in quantum dot spin arrays.