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## Probing Primordial Black Hole and Dark Matter Energy Injection Using the 21-cm Power Spectrum

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Before reionization, the universe acts as a pristine calorimeter for detecting potential energy injections from primordial black holes and decaying or annihilating dark matter. The injected high-energy particles can alter the thermal and ionization states of hydrogen, leaving imprints on the 21-cm line signal. These energy injection sources are inherently inhomogeneous, as they depend on structure formation, and the energy deposition processes can be multi-step, delayed, and non-local to the injection site.

In this talk, I will present an updated version of our simulation code, DM21cm, designed to address these challenges. I will describe our treatment of in-halo and diffuse energy injection processes, and provide forecasts for the sensitivity of upcoming HERA 21-cm power spectrum measurements to signals from primordial black hole Hawking radiation, accretion emissions, and annihilating dark matter.

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