

## **Project Summary**

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#### **Acceleration Beyond the Wave Speed in a Dissipative Wave-Particle System**

The limiting speed of isotropic particles accelerated by waves is the wave speed. We study the acceleration of particles with anisotropic shapes and anisotropic dissipation in classical wave-particle systems. We expect that the limiting speed is larger than the wave speed. We will determine a phase diagram of the limiting dynamics where we distinguish between stationary states, periodic states and strange attractors. We investigate the impact of the anisotropy on the phase diagram. We will discuss particle accelerator applications and applications in cosmology. We will explore particle acceleration due to chemical waves and wave-particle interactions in population dynamics and other more abstract wave-particle systems.