



Contribution ID: 1901 Contribution code: WEPA080

Type: **Poster Presentation**

## Numerical simulations of radiation reaction using Lorentz-Abraham-Dirac formalism

*Wednesday, 10 May 2023 16:30 (2 hours)*

An accelerating charged particle emits electromagnetic radiation. The motion of the particle is further damped via self-interaction with its own radiation. For relativistic particles, the subsequent motion is described via a correction to the Lorentz force, known as the Lorentz-Abraham-Dirac force.

The aim of this research is to use the Lorentz-Abraham-Dirac force to computationally simulate the radiation damping that occurs during nonlinear inverse Compton scattering. We build on our previous work and the code which simulates single-emission inverse Compton scattering to incorporate the effect of multiple emissions, thereby modeling the radiation reaction.

### Funding Agency

This work was supported by US NSF CAREER grant # 184771.

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** ROGERS, Emerson (Old Dominion University)

**Co-authors:** TERZIC, Balsa (Old Dominion University); BREEN, Elizabeth (Old Dominion University); JOHNSON, Erik (Old Dominion University); KRAFFT, Geoffrey (Thomas Jefferson National Accelerator Facility)

**Presenter:** ROGERS, Emerson (Old Dominion University)

**Session Classification:** Wednesday Poster Session

**Track Classification:** MC5: Beam Dynamics and EM Fields: MC5.D11: Code Developments and Simulation Techniques