Euclid TechLabs has extensive experience in computational modeling and design of particle accelerators and related applications. We offer both software for sale and consulting services, both for Windows® and Linux based platforms.

- **BBU-3000 system of codes** has developed primarily to study beam breakup effects in dielectric loaded wakefield structures. The code uses analytic wakefields to compute the forces between particles. A FODO channel or solenoid can be placed around the wakefield device for beam breakup suppression. A GUI is available to set up and monitor the progress of the simulation. A high speed GPU-based force calculator has also been implemented.

- Euclid distributes the **SuperLANS family of PC/Windows® codes** for axisymmetric RF cavity field calculations. Some of the capabilities of this suite include monopole and multipole fields and the use of different materials and boundary conditions.

- Euclid is developing a **multiphysics model of cavity breakdown** using in-house software and third party codes where appropriate. Breakdown in normal and superconducting RF cavities is a complex problem. Our goal is to provide the capability of a complete, physically authentic simulation of cavity breakdown.

- Our expertise also extends to modeling the **interaction of ionizing radiation with materials**. These problems have included simulations the spatial distribution of charge deposited in dielectrics by electron beams, and radiation shielding design for mobile CT facilities.

- We have a strong expertise in modeling beam based **X-ray, THz, and neutron sources**.
Our Products and Services

- Beam Physics Turnkey Solutions
  - Ultra-compact DLA accelerators
  - Conventional RF copper linacs
  - SRF linacs

- Accelerator components
  - Photoinjectors
  - Ceramics and CVD diamond accelerating structure prototyping
  - SRF cavities
  - Copper accelerating structures
  - High power RF switchers
  - High power RF couplers
  - RF windows

- Advanced Materials
  - CVD diamond
  - Ceramics
  - Ferroelectrics

- Software development and modeling
  - SuperLANS family of accelerator codes
  - Multiphysics breakdown modeling
  - X-ray and high-energy particle shielding simulations
  - Accelerator structure design

- Services
  - Ceramic and dielectric sputtering metallization
  - Consulting
    - High power microwave and RT technology
    - Linear accelerators
    - Computational electromagnetics
    - Algorithm development