Advanced Accelerator Research

The accelerator research program at SLAC performs research on accelerator technology and particle beam physics pushing both energy and luminosity in high-energy electron colliders. One aspect is research into new techniques and devices for high-gradient acceleration and focusing for electron linear colliders up to 5 TeV. Work involves collaborations with physicists from several universities, other laboratories and the private sector.

ORION: AN ADVANCED ACCELERATOR RESEARCH FACILITY

The ORION facility is envisioned to be a low-cost facility that will attract scientists with a passion for advanced accelerator research. This facility will have the needed resource readily available for scientists to carry out their advanced research. A detail of the facility in short is presented. The ORION facility concept is predicated on the fact that accelerated accelerator research is crucial for the future of particle physics. The goal is to understand the physics and design the technologies essential for reaching high energies.

The ORION facility is a collaboration of CERN, DESY, KEK, Stanford, UCLA, and USC. Other institutions are welcome.

PLASMA WAKEFIELD ACCELERATOR

Although the concept of “plasma wakefield” has been around for over twenty years, and small-scale experiments have demonstrated the principle in electron, photonic and optical-length plasmas, the SLAC experiment in the first to see long plasma periods that are equal to or longer than the plasma frequency. Higher energy particles are bent less by the dipole than lower energy ones, and the beam ends up being spread transversely according to the region. Higher energy particles are bent less by the dipole than lower energy ones, and the beam ends up being spread transversely according to the region. Higher energy particles are bent less by the dipole than lower energy ones, and the beam ends up being spread transversely according to the region.

The machining tolerance is 1 micron. To surpass the mechanism and limits of damage due to cyclic fatigue from pulsed temperature rise. For this purpose experiments have been done using a TESLA mode cavity at SLAC. Damage is in the form of cracks and grain growth is shown to occur on the surface of the extended copper after 100 million pulses at 120°C pulsed temperature rise. The damage is shown as a ring on the surface of the copper test piece where the maximum heating has occurred.

PULSED HEATING CAVITY

The luminosity curve shows the exponential growth in CII energy that has come from new accelerator physics and technology. This growth has been followed by profound discoveries. A CII relativistic klystron is a klystron, s, J, quarks, gluons and QCD, W, Z, top quarks. The relativistic klystron, s, J, quarks, gluons and QCD, W, Z, top quarks.

MILLIMETER—WAVE BEAM SHEET KLYSTRON DEVELOPMENT

The electromagnetic wave-powering accelerator is produced by high-voltage electron beam amplifiers, or klystrons. The relativistic klystron is a process set in the operating wavelength, 3.3 mm of W-band. The relativistic klystron is a process set in the operating wavelength, 3.3 mm of W-band. The relativistic klystron is a process set in the operating wavelength, 3.3 mm of W-band. The relativistic klystron is a process set in the operating wavelength, 3.3 mm of W-band.