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Educating the next generation in the science and technology of plasmas, beams and accelerators[1]

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Accelerators are essential tools for discovery in fundamental physics, biology, and chemistry. Particle beam based instruments in medicine, industry and national security constitute a multi-billion dollar per year industry. More than 55,000 peer-reviewed papers having accelerator as a keyword are available on the Web. Yet only a handful of universities offer any formal training in accelerator science. Several reasons can be cited: 1) The science and technology of non-neutral plasmas cuts across traditional academic disciplines. 2) Electrical engineering departments have evolved toward micro- and nano-technology and computing science. 3) Nuclear physics departments have atrophied. 4) With few exceptions, interest at individual universities is not extensive enough to support a strong faculty line. The United States Particle Accelerator School (USPAS) is National Graduate Educational Program that has developed an educational paradigm that, over the past twenty-years, has granted more university credit in accelerator / beam science and technology than any university in the world. Governed and supported by a consortium of nine DOE laboratories and two NSF university laboratories, USPAS offers a responsive and balanced curriculum of science, engineering, and hands-on courses. Sessions are held twice annually, hosted by major US research universities that approve course credit, certify the USPAS faculty, and grant course credit. The USPAS paradigm is readily extensible to other rapidly developing, cross-disciplinary research areas such as high energy density physics.

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