

Plenarvortrag

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Plasma based accelerators — ●ALLEN CALDWELL — Max-Planck-Institut für Physik, München

The concept of laser-induced plasma wakefields as a technique to accelerate charged particles was introduced 35 years ago as a means to go beyond the accelerating gradients possible with metallic cavities supporting radio frequency electromagnetic fields. Significant developments in laser technology have made possible the pulse intensity needed to realize this concept, and rapid progress is now underway in the re-

alization of laser-driven plasma wakefield acceleration. It has also been realized that similar accelerating gradients can be produced by particle beams propagating in plasmas, and experimental programs have also been undertaken to study this possibility. Positive results have been achieved with electron-driven plasma wakefields, and a demonstration experiment with proton-driven wakefields is under construction at CERN. The concepts behind these different schemes and their pros and cons will be described, as well as the experimental results achieved. An outlook for future practical uses of plasma based accelerators will also be given.