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Applications of High-Gradient Accelerators

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Prototype accelerating structures are now being built and operated routinely with gradients in excess of 100 MV in test stands which are part of the CLIC TeV-range electron positron collider project. This represents a factor of approximately three beyond the highest gradient linacs in operation today, and is due to a significantly improved understanding of how to design rf structures for high fields. The success of these structure tests, along with the performance of the X-band rf systems which power them, is inspiring the spread of the high-gradient technology to numerous other projects including Inverse Compton Sources, X-ray Free Electron Lasers and medical linacs. A survey of selected applications is presented.

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