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A high-power positron converter based on a recirculated liquid metal in-vacuum target

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An effective high-power positron converter for electron linear accelerators is not currently available from industry. A commercial source would allow research institutes to have ready access to high-brightness positrons for a wealth of material science, nuclear, particle, and accelerator physics projects. Xelera Research LLC has designed, built, and tested a prototype free-surface liquid-metal (GaInSn) jet converter. Free-surface liquid-metal jets allow for significantly greater electron beam power densities than are possible with solid targets. Higher power densities lead to greater positron production and, importantly, allow continuous wave (CW) operation. A modified version of the GaInSn converter prototype is planned to be constructed and tested at the Thomas Jefferson National Accelerator Facility.

Footnotes

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