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Alkali-antimonide photocathode transport in a vacuum-sealed canister

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The high Quantum Efficiency (QE) and low Mean Transverse Energy (MTE) of alkali antimonide photocathodes enable the production of bright electron beams for a variety of accelerator applications. Growing alkali antimonide photocathodes requires an elaborate growth chamber and an operator with considerable expertise. Moreover, their sensitivity to chemical poisoning requires storage in an ultra-high vacuum environment, which poses a significant challenge to their commercialization. As a step towards commercialization, we developed a “cathode-in-a-can” system to provide photoinjector facilities with high performance, air sensitive photocathodes. This system allows for a cathode to be grown at one facility, shipped in a compact vacuum-sealed canister to another facility, then removed from the canister and transferred to the photoinjector to preserve the cathode’s excellent photo-emitter qualities.

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Footnotes

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Yes

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