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## Improved robustness of GaAs-based photocathodes activated by Cs, Sb, and O<sub>2</sub>

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GaAs-based photocathodes are widely used to produce highly spin polarized electron beams at high currents. Spin polarized photoelectrons can escape into vacuum only when GaAs surface is activated to Negative Electron Affinity (NEA). The NEA surface is notorious for extreme vacuum sensitivity, and this results in rapid QE degradation. We activated GaAs samples by unconventional methods using Cs, Sb, and oxygen. We present successful NEA activation on GaAs surface and more than a order of magnitude improvement in charge extraction slifetime compared to the standard Cs-O<sub>2</sub> activation without significant loss in spin polarization.

### Summary

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**Session Classification:** Polarized Sources

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