

Electron beam driven alkali metal atom source for loading a magneto-optical in a cryogenic environment

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Reference:

S. Haslinger, R. Amusuess, Ch. Koller, C. Hufnagel, N. Lippok, J. Majer, J. Verdu, S. Schneider, and J. Schmiedmayer

submitted http://arxiv4.library.cornell.edu/PS_cache/arxiv/pdf/1003/1003.5144v2.pdf [2], accepted in Applied Phys. B

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We present a versatile and compact electron beam driven source for alkali metal atoms which can operate even with a heat dissipation of less than 1mW, and can therefore be implemented inside a closed cycle cryostat. Atoms are loaded into a Magneto-Optical Trap (MOT) and at a given thermal input power, loading rates three orders of magnitude higher than in a typical MOT loaded by an alkali metal dispenser are achieved. The linear scaling of the MOT loading rate with electron current observed in the experiments, point to electron stimulated desorption as the mechanism setting free the atoms.

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