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Proposal for a hybrid 2D MOT/molasses configuration for potassium-41[1] W. A. PETERSON, J. P. WRUBEL, Creighton University — We report a proposed design for a compact 2D MOT-optical molasses hybrid for potassium-41 atoms. Adding electromagnets to a previously-reported permanent-magnet based 2D MOT [G. Lamporesi et al., Rev. Sci. Instrum. 84, 063102 (2013)], we show it is possible to flatten the magnetic field at the trap's center, creating a region suitable for molasses. The remaining magnetic field at the fringes of the molasses provides a restoring force sufficient to keep the atoms trapped. This technique should reduce the rate of atom escape from the molasses and allow cooling times substantially longer than in a standard, un-trapped molasses.

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