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Efficient thermoelectric trap for metal vapours suitable for high-vacuum system MARIUSZ PIWINSKI, LUKASZ KLOSOWSKI, DAREK DZICZEK, STANISLAW CHWIROT, Institute of Physics, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University in Torun, Grudziadzka 5, 87-100 Torun, Poland — Atomic beams are widely used in various collisional experiments [1-3]. Typically, cold traps are used to prevent the investigated atoms from spreading within the vacuum chamber and contaminating the system. Usually such a trap consists of a vacuum feedthrough with metal element cooled with liquid nitrogen or dry ice on the atmosphere side and a metal trap in the vacuum [4]. Using liquid nitrogen or dry ice is relatively inconvenient due to high costs of operation and a need of periodically refilling the reservoir of the cold medium. We present a new thermoelectric cold trap composed of water–cooled vacuum feedthrough with Peltier modules placed at the high vacuum end. The present system ensures the cold trap temperature below -20°C, low enough to efficiently catch the atoms of interest. The new cold trap was characterised and compared with typical LN_2 trap [2,5]. [1] S. Napier et al. Phys. Rev. A 79, 042702 (2009) [2] M. Piwinski et al. Phys. Rev. A 91, 062704 (2015) [3] B.P. Marinkovic et al. Rad. Phys. and Chem. 76, 455 (2007) [4] M. Piwinski et al. Phys. Rev. A 86, 052706 (2012) [5] M. Piwinski et al. J. Phys. B: At. Mol. Opt. Phys. 35, 38213827 (2002)

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