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Abstract for an Invited Paper
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Towards charge transfer or Sisyphus cooling of molecules (using ro-vibrational cooling)¹

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Simple pulse shaping techniques of laser diodes has allowed us to manipulate, on demand, the rotational and vibrational population of di-atomic molecules. We have first demonstrated this optical pumping method on Cs₂ [1]. Its extention to molecular beam will be discussed with BaF as an example. This paves the way to the production of brighter molecular beam as well as a possible new method of deceleration and production of cold molecular cloud. We will detail and present ideas based on charge transfer and Sisyphus cooling with results on BaF.

[1] Rovibrational Cooling of Molecules by Optical Pumping I. Manai, R. Horchani, H. Lignier, P. Pillet, D. Comparat, A. Fioretti, M. Allegrini, Phys. Rev. Lett. 109, 183001 (2012)

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