

Josephson Dynamics of Spin-Orbit Condensate in a Double-Well Trap

V O NESTERENKO¹

¹*Bogolubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Joliot-Curie 6, 141980, Moscow region, Dubna, Russia. Contact Phone: +74962163383
Contact Email: nester@theor.jinr.ru*

The controlled tunnelling of the Bose-Einstein condensate (BEC) in multi-well traps can be designed in many ways see, e.g. [1-5]. The Josephson tunnelling of spin-orbit condensate suggests a variety of various regimes, an interesting physics behind [6]. In this talk, we focus on Josephson dynamics of a repulsive binary spin-orbit condensate in a double-well trap. The atomic current is generated by the time-dependent barrier shift. Both dc and ac scenarios are scrutinized at different values of Rabi frequency, detuning and spin-orbit parameter.

References

- [1] E Torrontegui, S Ibáñez, S Martínez-Garaot, M Modugno, A del Campo, D Guéry-Odelin, A Ruschhaupt, X Chen and J G Muga, *Adv. At. Mol. Opt. Phys.* **62**, 117 (2013)
- [2] V O Nesterenko, A N Novikov, F F de Souza Cruz and E L Lapolli, *Laser Phys.* **19**, 616 (2009)
- [3] V O Nesterenko, A N Novikov, A Y Cherny, F F de Souza Cruz and E Suraud, *J. Phys. B* **42**, 235303 (2009)
- [4] S Giovanazzi, A Smerzi and S Fantoni, *Phys. Rev. Lett.* **84**, 4521 (2000)
- [5] V O Nesterenko, A N Novikov and E Suraud, *Laser Phys.* **24**, 125501 (2014)
- [6] M A Garcia-March, G Mazzaella, L Dell'Anna, B Julia-Diaz, L Salasnich and A Polls, *Phys. Rev. A* **89**, 063607 (2014)