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Miron Kursa, Konrad Bajer and Tomasz Lipniacki* (tlipnia@ippt.gov.pl), Inst. of Fundamental Technological Research, Pawinskiego 5B, 02-106 Warsaw, Poland. *Cascade of vortex loops created after the reconnection of quantum vortices - an efficient mechanism of quantum vortex tangle evaporation at zero temperature.*

In this study we demonstrated that single reconnection of two straight vortex lines at sufficiently small angle (i.e. when vortices at the time of reconnection are locally almost antiparallel) leads to creation of a cascade of vortex loops. Our analysis, motivated by analytical solution obtained in the localized induction approximation, is based on numerical simulations of the vortex line motions in terms of Biot-Savart law and is adequate to the fin vortex filaments in an ideal (inviscid) fluid or to quantized vortices in superfluid helium at low temperatures. In the latter case, we showed that the generation of the vortex loops cascades provides an efficient mechanism of decay or evaporation of vortex tangle in the limit of zero temperature when the other dissipation mechanisms become inefficient. (Received February 12, 2010)