

# LAGRANGIAN FIBRATIONS AND OPEN GROMOV-WITTEN INVARIANTS

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ABSTRACT. The first two talks we will address problems of symplectic topology, such as, what is the space of Lagrangian tori modulo Hamiltonian isotopy in a given symplectic manifold and what are the shapes of Weinstein neighbourhoods of a given Lagrangian torus. For that, we view Lagrangian tori as fibres of almost toric fibrations (or what we call Gelfand-Cetlin fibrations) and we study their open Gromov-Witten invariants and their Fukaya algebra. This will be based on recent work with Egor Shelukhin and Dmitry Tonkonog as well as previous work. As an application of the recent work, we show, under certain assumptions, the unobstructedness of SYZ fibres in a symplectic Calabi-Yau.

For the third talk we will explore how relate the superpotential of a monotone Lagrangian inside a Donaldson divisor  $D$  of  $X$  to the superpotential of its Biran's lift in  $X$ . The relative Gromov-Witten invariants of the pair  $(X, D)$  plays a role. Applications include proving existence on infinitely many monotone Lagrangian tori in symplectic manifolds of arbitrary dimensions, providing relations for relative Gromov Witten invariants for some complete intersections, and, via the relationship proven by Tonkonog between periods of the superpotential of a monotone Lagrangian torus and quantum periods, we recover a formula of Coates-Corti-Galkin-Kasprzyk relating quantum periods of  $D$  and  $X$ , but in a slightly different setting.