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Department of Mathematics
The Chinese University of Hong Kong

數學系
香港中文大學

Phone: (852) 3943 7988 • Fax: (852) 2603 5154 • Email: dept@math.cuhk.edu.hk (Math. Dept.)
Room 220, Lady Shaw Building, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong

Seminar

A Lefschetz fibration structure on minimal symplectic fillings of a quotient surface singularity

Professor Jongli Park
Seoul National University

Abstract

Since it was known that any closed symplectic 4-manifold admits a Lefschetz pencil and that a Lefschetz fibration structure can be obtained from a Lefschetz pencil by blowing-up the base loci, the study of Lefschetz fibrations has become an important research theme for understanding symplectic 4-manifolds topologically. Furthermore, it is also one of active research topics in symplectic 4-manifolds to classify symplectic fillings of certain 3- manifolds equipped with a contact structure.

Among them, people have long studied symplectic fillings of the link of a quotient surface singularity. For example, P. Lisca classified symplectic fillings of cyclic quotient singularities whose corresponding link is lens space, and M. Bhupal and K. Ono classified all possible symplectic fillings of non-cyclic quotient surface singularities. And then, J. Park together with Heesang Park, Dong-soo Shin, and Giancarlo Urzu´a constructed an explicit one-to-one correspondence between the minimal symplectic fillings and the Milnor fibers of non-cyclic quotient surface singularities.

By the way, M. Bhupal and B. Ozbagci found an algorithm to present each minimal symplectic filling of a cyclic quotient sur- face singularity as an explicit positive allowable Lefschetz fibration, called PALF, structure. Furthermore they showed that each PALF structure can be obtained from the minimal resolution by monodromy substitutions which correspond to rational blow-downs topologically.

In this talk, I'd like to explain how to construct an explicit PALF structure on any minimal symplectic filling of the link of non-cyclic quotient surface singularities. This is a joint work with Hakho Choi.

Date: 8 January 2018 (Monday)
Time: 2:00pm – 3:00pm
Venue: Room 222, Lady Shaw Building,
The Chinese University of Hong Kong, Shatin

All are Welcome