# **CONTACT TOPOLOGY WORKSHOP** March 22, 2019 Hacettepe University, Ankara

Speakers: Fırat Arıkan, METU Adalet Çengel, Boğaziçi University Elif Medetoğulları, Atılım University Sinem Onaran, Hacettepe University Burak Özbağcı, Koç University Ferit Öztürk, Boğaziçi University Merve Seçgin, TED University

Registration is needed for this workshop. Please register <u>here</u> by March 17. The talks will be in Yaşar Ataman Meeting Room on the second floor of Mathematics Department at Hacettepe University. For more information contact oguzhan.odabas12 (at) hacettepe (dot) edu (dot) tr **\*This workshop is supported by TÜBİTAK 1001-Project No: 115F519** 

	Schedule
09:45-10:00	Registration
10:00-10:30	Elif Medetoğulları "Branched Covers of Surfaces and The Birman-Hilden Property"
10:30-11:00	Merve Seçgin A Review of Heegaard Floer Homology Contact Invariant
11:00-11:15	Coffee-Tea Break
11:15-11:45	Fırat Arıkan "An orientation invariant of compact Legendrian submanifolds"
11:45-13:30	Lunch Break
13:30-14:00	Adalet Çengel "Signatures of Lefschetz fibrations"
14:00-14:30	Sinem Onaran "Contact Surgeries on Contact 3-manifolds"
14:30-15:00	Coffee-Tea Break
15:00-15:45	Burak Özbağcı "Genus one Lefschetz fibrations on disk cotangent bundles of surfaces"
15:45-16:15	Coffee-Tea Break
16:15-17:00	Ferit Öztürk "On overtwisted link manifolds of real algebraic singularities"

### Abstacts

# Speaker: Fırat Arıkan (METU)

Title: An Orientation Invariant of Compact Legendrian Submanifolds Abstract: Using an open book decomposition of a closed contact manifold M, we introduce a new Legendrian isotopy invariant, called the orientation number, for any compact orientable Legendrian submanifold of M.

#### Speaker: Adalet Çengel (Boğaziçi University)

Title: Signatures of Lefschetz fibrations

Abstract: In his Ph. D. thesis, Burak Ozbagci described an algorithm computing signatures of Lefschetz fibrations where the input is a factorization of the monodromy into a product of Dehn twists. I will talk about a reformulation of Ozbagci's algorithm which becomes much easier to implement. Our main tool will be Wall's non-additivity formula applied to what we call partial fiber sum decomposition of a Lefschetz fibration over disk. This is a joint work with C. Karakurt.

### Speaker: Elif Medetoğulları (Atılım University)

Title: Branched Covers of Surfaces and The Birman-Hilden Property

Abstract: It is known that unbranched covers, regular branched covers of surfaces satisfies a property which relates liftable homemorphisms of base surface with fiber preserving homemorphisms of the covering surface of a branched covering. This property is called the Birman-Hilden property. Moreover, there are examples and non-examples among irregular branched covers about satisfying this property. In this talk, we will briefly mention previously known results and analys this property for non-orientable surfaces. This is a joint work with F. Atalan.

# Speaker: Sinem Onaran (Hacettepe University)

Title: Contact Surgeries on Contact 3-manifolds

Abstract: Contact surgeries have long been an essential tool in the study of contact 3-manifolds. In this talk, we will focus on the behaviour of contact structures under contact (+n)-surgeries/ (+1/n) surgeries along Legendrian knots where the surgery slope is measured with respect to the contact framing of the Legendrian knot.

#### Speaker: Burak Özbağcı (Koç University)

Title: Genus one Lefschetz fibrations on disk cotangent bundles of surfaces Abstract: We describe a Lefschetz fibration of genus one on the disk cotangent bundle of any closed orientable surface S. As a corollary, we obtain an explicit genus one open book decomposition adapted to the canonical contact structure on the unit cotangent bundle of S.

#### Speaker: Ferit Öztürk (Boğaziçi University)

Title: On overtwisted link manifolds of real algebraic singularities Abstract: I will discuss if every overtwisted contact structure on the 3-sphere can be obtained via the Milnor fibration of an isolated real algebraic singularity.

# Speaker: Merve Seçgin (TED University)

Title: A Review of Heegaard Floer Homology Contact Invariant

Abstract: In the early 2000's, Ozsvath and Szabo defined powerful algebraic tools for low dimensional objects, specifically for closed 3-manifolds, called Heegaard Floer Homology. We will introduce and review the contact invariant which is an element of the (hatted) Heegaard Floer Homology group of a closed contact 3-manifold. It gives a criterion for tightness and Stein fillability of the given contact structure.



# **Workshop Photos**







