**TÜBİTAK 1001 project 116F 130 ’Period integrals associated to algebraic varieties’ Workshop**

Place: Boğaziçi Üniversitesi IMBM

http://www.imbm.org.tr/indexen.htm

27.07 (Friday)

11:00 S. Tanabé (GSÜ), Notion of monodromy in geometry and analysis I.

14:00 H.Güntürkün (GSÜ), Zariski-Van Kampen Theorem for fundamental group I.

15:30 Ü.G.Aydın (GSÜ), Fundamental group assoc. to torus knots.

17:00 Additional discussions.

28.07 (Saturday)

14:00 S. Tanabé(GSÜ), Notion of monodromy in geometry and analysis II.

15:30 T.Akyar (ODTÜ), Introduction to toric varieties I.

17:00 A.Gündüz (YTÜ), Singularities of a polynomial mapping.

29.07 (Sunday)

14:00 H.Güntürkün (GSÜ), Zariski-Van Kampen Theorem for fundamental group II.

15:30 T.Akyar (ODTÜ), Introduction to toric varieties II

30.07 (Monday)

14:00 İ.Sağlam (Adana BTÜ), Signature calculation of area hermitian form on some spaces of polygons.

15:30 M. Koçar (GSÜ),, Algebraic functions in terms of Pochhammer Hypergeometric functions.

17:00 Additional discussions

**TÜBİTAK 1001 proje 116F 130 ’Period integrals associated to algebraic varieties’ Research subjects:** Transcendental algebraic geometry. Topology, complex analysis and geometry related to algebraic varieties. Monodromy groups. Discrete/arithmetic groups and representation theory. Galois covering and branching, degeneration of algebraic varieties. Topology of hyperplane arrangements, amoebas,braid groups. Hodge structure of the cohomology. Mirror symmetry conjecture (Fukaya category and derived category of coherent sheaves). Differential equations on the complex domain (Gel'fand-Kapranov-Zelevinski hypergeometric functions. Gauss-Manin systems: Picard-Fuchs eq.).

**Subjects and References of talks :**

S.Tanabe: On hypergeometric functions. **Mostow** G.D.  **Braids**, **hypergeometric** functions, and lattices. Bull. Amer. Math. Soc. (N.S.) 16 (1987), no. 2, 225--246.

On Picard-Lefschetz theorem: Singularities of Differentiable Maps Volume II Monodromy and Asymptotic Integrals, **Arnold**, V.I., **Varchenko**, A.N., **Gusein-Zade**, S.M. Chap. 1. Elements of the theory of Picard Lefschetz https://www.maths.ed.ac.uk/~v1ranick/papers/agzv2.pdf

H.Güntürkün: I.Shimada, LECTURES ON ZARISKI VAN-KAMPEN THEOREM <http://www.math.sci.hiroshima-u.ac.jp/~shimada/LectureNotes/LNZV.pdf>

<https://www.youtube.com/watch?v=QmA0KHdDXkY>

T.Akyar; W.Fulton, Introduction to toric varieties, Princeton.

# Ü.G.Aydın: O.Zariski, On the Topology of Algebroid Singularities *American Journal of Mathematics* Vol. 54, No. 3 (Jul., 1932), pp. 453-465

M.Koçar: I.Nörlund, Hypergeometric functions, Acta Math. 94, (1955/56), pp.289-349.

K.Iwasaki, H.Kimura, S.Shimomura, M.Yoshida, From Gauss to Painlevé, A modern theory of special functions}, Aspects of Mathematics, Vieweg Verlag, 1991

Belardinelli (G.), Fonctions hypergéométriques de plusieurs variables et résolution analytique des équations algébriques générales, Gauthier-Villars, 1960.