ÇANKAYA UNIVERSITY
FACULTY OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCES

SEMINAR

JORGENSEN'S INEQULITY AND PURELY LOXODROMIC 2-GENERATOR FREE KLEINIAN GROUPS

SPEAKER : **Dr. İlker Yüce**

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PLACE : **Çankaya University (Central Campus), R-213**

Abstract

Let ξ and η be two non--commuting isometries of the hyperbolic 3--space $\mathbb{H}^3$ such that $\langle \xi, \eta \rangle$ is a purely loxodromic free Kleinian group. Suppose that the inequality

$$\max\{d_\gamma z_0, d_{\beta\gamma\beta^{-1}} z_0\} \geq \max\{d_{\psi\phi\psi^{-1}} z_0 \ : \ \psi, \, \phi \in \Psi_r = \{\xi, \eta^{-1}, \eta, \xi^{-1}\}\}$$

holds for some $\gamma \in \Psi_r$ and $\beta \in \Psi_r - \{\gamma, \gamma^{-1}\}$ for $z_0 \in \mathbb{H}^3$ the mid--point of the shortest geodesic segment joining the axes of γ and $\beta\gamma\beta^{-1}$, where $d_\gamma z_0$ denotes the distance between z_0 and γz_0. Let A and B be the matrices in $\mathrm{PSL}(2, \mathbb{C})$ representing the isometries γ and β, respectively. If $tr(\cdot)$ denotes the trace and $\alpha = 24.8692...$ is the unique real root of the polynomial $21x^4 - 496x^3 - 654x^2 + 24x + 81$ greater than 9, in this talk I will prove that

$$|tr^2(A) - 4| + |tr(ABA^{-1}B^{-1}) - 2| \geq 2\sinh^2\left(\frac{1}{4}\log\alpha\right) = 1.5937....$$

Also a generalisation to finitely generated purely loxodromic free Klenian groups will be conjectured if time permits.

All interested are cordially invited.

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