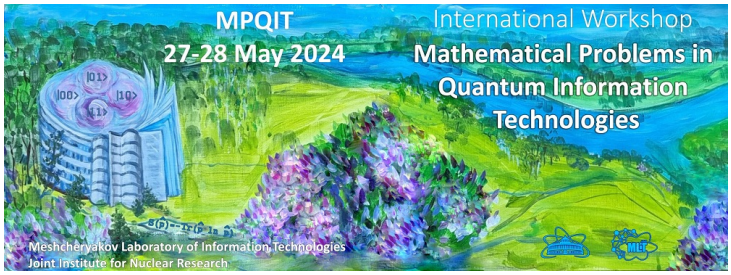

Contribution ID: **10** Type: **not specified**

Electrostatic ion traps in Triangles

Tuesday, 28 May 2024 15:30 (20 minutes)

In the talk we discuss on the equilibrium points (critical points) of the electrostatic (Coulomb) potential of three mutually repelling point charges placed at fixed points. This topics are closely related to the Maxwell conjecture for three point charges and linear electrostatic ion traps.

We show that the incenter of an isosceles triangle is a stable equilibrium point of the electrostatic potential of certain point charges placed at its vertices. To this end, explicit formulas for these charges are given and the hessian of their electrostatic potential is computed. The behaviour of this hessian in a family of triangles with the given inscribed and circumscribed circles is investigated and its extremal values are computed. As an application we prove that each point in the unit disc is a stable equilibrium point of a certain triple of point charges on its boundary, which yields an explicit scenario of robust electrostatic control in Euclidean discs.

The talk are based on the joint works [1] and [2] with G.Khimshiashvili.

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References

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[2] Giorgadze G. and Khimshiashvili G. Triangles and electrostatic ion traps. J. Math. Phys. 62, 053501, 2021. https://doi.org/10.1063/5.0040735

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