

## Welcome to NICA days 2019 and IVth MPD Collaboration Meeting in Warsaw



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# Is orbital angular momentum efficiently transferred to spin degrees of freedom at NICA energies?

*Monday, 21 October 2019 12:00 (25 minutes)*

We compute the relaxation time for quark/antiquark spin and thermal vorticity alignment in a quark-gluon plasma at finite temperature and quark chemical potential. We model the interaction of quark/antiquark spin with thermal vorticity as driven by a phenomenological modification of the elementary quark interaction with gluons. We find that in a scenario where the angular velocity produced in a peripheral heavy-ion collision competes with transverse expansion, and thus is small, quarks/antiquarks take a long time to align their spin with the vorticity. However, when the angular velocity created in the reaction is large, the alignment is efficient and well within the lifetime of the system created in the reaction. The relaxation time is larger for antiquarks which points out to a difference for the polarization of hadrons and antihadrons when this alignment is preserved during hadronization.

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