

1. **Effect of Coriolis force on the shear viscosity of quark matter: A nonrelativistic description**
2. **Effect of the Coriolis force on the electrical conductivity of quark matter: A non relativistic description**

An artificial baby universe made of quarks and gluons, called quark gluon plasma (QGP) can be produced in the Large Hadron Collider (LHC) at CERN, Geneva and Relativistic Heavy Ion Collider (RHIC) at BNL, USA. This QGP is produced by accelerating and colliding two high energetic nuclear beams inside the particle accelerator. Two articles from the QGP group of IIT Bhilai are published on 19th March, 2024 in the same volume of Physical Review C journal.

1. DOI: [10.1103/PhysRevC.109.034913](https://doi.org/10.1103/PhysRevC.109.034913)

The screenshot shows the article page for 'Effect of Coriolis force on the shear viscosity of quark matter: A nonrelativistic description' in Physical Review C. The page includes the APS logo, 'PURPOSE-LED PUBLISHING™' tagline, and navigation links for Journals, Physics Magazine, and Help/Feedback. The article title is prominently displayed, along with the authors' names: Cho Win Aung, Ashutosh Dwibedi, Jayanta Dey, and Sabyasachi Ghosh. Below the authors are their respective profile pictures. The abstract text is visible, starting with 'Shear viscosity becomes anisotropic in a rotating medium. It is discovered here that for rotating thermalized quantum systems...'. The page also features social media sharing icons, a 'Check for updates' button, and a 'Reuse & Permissions' button. The journal information indicates it is Volume 109, Issue 3, published in March 2024.

2. DOI: <https://doi.org/10.1103/PhysRevC.109.034914>

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Effect of the Coriolis force on the electrical conductivity of quark matter: A nonrelativistic description

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ABSTRACT

Rotating quarks and hadronic systems, produced in peripheral heavy ion collisions, can experience Coriolis force and other forces due to rotational motion. Considering only the effect of Coriolis force, we have calculated the electrical conductivity for nonrelativistic rotating matter using the relaxation time approximation under the Boltzmann transport equation. A similarity in mathematical calculations of electrical conductivity at finite rotation and finite magnetic fields is exposed, where an equivalence role between Coriolis force on massive particle's motion and Lorentz force on charged particle's motion is noticed. As the beginning level step, we consider only the Coriolis force in the nonrelativistic formalism, which will be extended in the future towards the relativistic case, and to adopt other forces for a more realistic description of the rotating quark and hadronic system.

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A theoretical study on the shear viscosity and electrical conductivity of QGP created in the Heavy Ion Collisions is carried out by the research group of Dr. Sabyasachi Ghosh (Assistant Professor, Department of Physics, IIT Bhilai) with his PhD students - Mr. Ashutosh Dwibedi, Mr. Cho Win Aung (ASEAN-PhD fellow) and Dr. Jayanta Dey (former PhD student of Dr. Ghosh and currently doing post-doc in IIT Indore). They have found the effect of Coriolis force due to rotation of quark matter on the magnitude of shear viscosity and electrical conductivity.