



# NUSTAR Seminar

**Caroline Robin**

**Wednesday, May 05, 2021 at 04.00 pm**

**Fakultät für Physik, Universität Bielefeld, Germany  
GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt, Germany**

## **Zoom Link**

<https://gsi-fair.zoom.us/j/99296194625>

Meeting-ID: 992 9619 4625  
Kenncode: 750353

## **Spin-isospin response of nuclei within Relativistic Nuclear Field Theory**

Caroline Robin

Nuclei are unique quantum many-body systems which can exhibit a tremendous variety of behaviors. Historically, different many-body methods have been designed to tackle specific mass regions or physical phenomena. However, the advent of new radioactive-beam facilities, together with the urgent need to interpret recent astrophysical observations, now make it essential to provide a predictive description of nuclear properties across the nuclear chart, requiring the connection of traditional theoretical approaches.

In this talk I will present the Relativistic Nuclear Field Theory as an approach to the nuclear many-body problem. Starting from the relativistic mean field, this method applies nuclear field theory in order to account for inter-nucleon correlations emerging from the coupling between single nucleons and collective vibrations of the nucleus. Such a framework allows for a connection between nuclear scales and can provide a consistent description of ground and excited states in a wide range of nuclei.

I will present applications of this approach to mid-mass and heavy nuclei, focusing on the description of the spin-isospin response, such as Gamow-Teller modes, which govern beta-decay and r-process nucleosynthesis.

Convener: T. Neff  
Secretary: R. Krause / D.Press  
<https://indico.gsi.de/event/12544/>