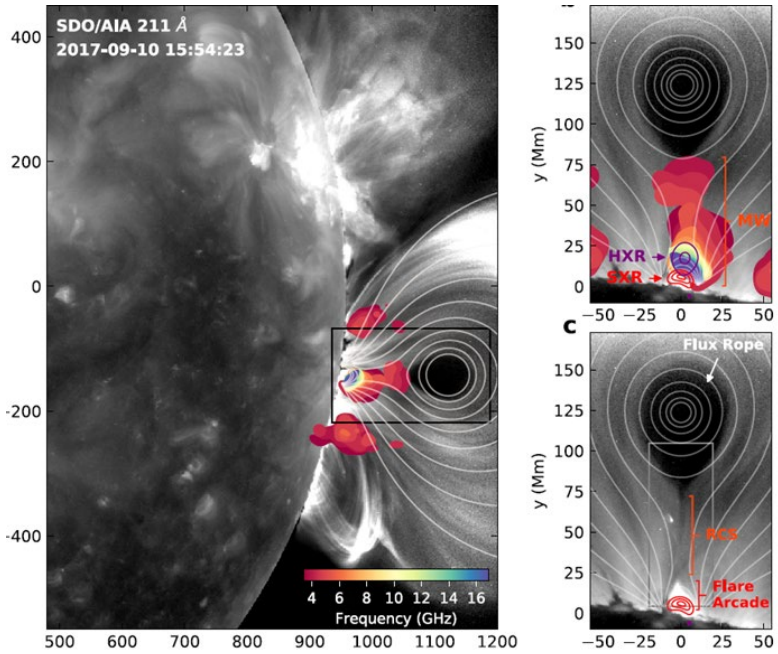
Physikalisches Institut
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg

PHYSIKALISCHES KOLLOQUIUM

AM 06. MAI 2024 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



SOLAR FLARES: DYNAMICS OF ENERGY RELEASE, PARTICLE ACCELERATION, AND ENERGY PARTITIONS

GREGORY FLEISHMAN

KIS FREIBURG

Solar flares are explosive phenomena that cover a range of heights in the solar atmosphere. Flares are observed as transient brightenings throughout the electromagnetic spectrum that may last from a few seconds to many hours and display a multitude of appearances over various phases of their development. The solar flares release their energy via still poorly understood magnetic reconnection in the solar corona. In this talk I will present the methodology and current state-of-the-art of coronal magnetic field and plasma measurements in flares with microwave imaging spectroscopy data. I will give examples of evolving maps of coronal magnetic field, describe the regions showing the most prominent decay of the magnetic field releasing the free energy that drives the flare phenomenon, evaluate efficiency of the nonthermal particle acceleration and trapping, demonstrate how these new constraints help devising 3D models of solar flares, and discuss evolution of the energy partitions in the course of the flare.

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