Technische Universität Braunschweig

**Einladung zum**

# Physikalischen Kolloquium

## Wintersemester 2022/2023

**Physikzentrum der Technischen Universität Braunschweig**


## Jan Aarts

(*Huygens - Kamerlingh Onnes Laboratory, Leiden University*)


**will give a talk on**

## January 31st, 16:45, MS 3.1

# Spin-triplet supercurrents in lateral superconductor/ferromagnet Josephson junctions


The phenomenon of s-wave spin triplet Cooper pairs induced in ferromagnetic metals has been researched now for more than a decade, and its main aspects are well understood. Crucial in converting s-wave singlet pairs in the superconductor to s-wave triplets in the ferromagnet is the engineering of well-defined magnetic inhomogeneity. Much used for this is a layer stack wirh two different ferromagnets that have non-collinear magnetization. However, other kinds of magnetic textures are possible that have been much less investigated. Here I review experiments on lateral disk-shaped Josephson junctions, where the physics is largely determined by the vortex magnetization of the ferromagnetic disk. A particularly interesting finding is that the supercurrent distribution in such disks is strongly peaked at the rims of the device. The materials we use are mainly Nb, Ni and Co, but recent (and not fully understood) results on long range proximity effects in the halfmetallic ferromagnetic oxide $La_{0.7}Sr_{0.3}MnO_3$ will also be presented.