



# **Old Dominion University**

## **Department of Physics**

### **Colloquium**

**Tuesday, November 22, 2022**

## **"Physics with Electron Beams in Present and Future Facilities in Mainz"**

**Dr. Patrick Achenbach**  
**Jefferson Laboratory**

#### **Abstract:**

The Mainz Microtron (MAMI) is a facility to study the hadron structure with the electromagnetic probe at the Institute of Nuclear Physics in Mainz, Germany. Polarized electron and photon beams with energies up to 1.6 GeV are delivered to several experimental halls. Solid-state, polarized cryogenic, and gas jet targets in combination with dedicated detector systems are available for precision experiments in hadron physics. Complementary, the electron accelerator MESA (Mainz Energy-recovering Superconducting Accelerator) is under construction. Its innovative operating principle utilizes the energy-recovering principle. The focus using its internal beam is on high-precision scattering experiments including dark sector searches, the study of nucleon structure and few-body systems, and investigations of reactions relevant for nuclear astrophysics. Its external polarized beam will be used to perform sensitive tests of the Standard Model using parity-violating electron scattering. A beam dump experiment will search for light dark matter particles.

Presentation: **OCNPS: SCALE-UP ROOM 142 @ 3:00 pm**  
Refreshments: **PSB: OUTSIDE ROOM 1100 @ 2:30 pm**

**All interested persons are cordially invited to attend.**