

Development of Non-Reciprocal Edge Magnetoplasmon Components

This project focuses on the development and characterization of non-reciprocal microwave components based on edge magnetoplasmons (EMPs) in high-mobility two-dimensional electron systems.

The work will include device design based on simulations and light nanofabrication, followed by low-temperature, high-frequency transport measurements in strong magnetic fields. The student will study the propagation of EMP modes, quantify their non-reciprocal response, and explore their use as on-chip components such as isolators, circulators, or gyrators.

This project offers hands-on training in mesoscopic physics, microwave measurements, cryogenics, and non-reciprocal transport phenomena, and connects fundamental plasmon physics with applications in quantum and classical signal processing. It is ideal for students interested in topological effects, simulations and chiral transport.

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