

## HL 42: Invited Talk: Gregor Mussler

Time: Tuesday 12:30–13:00

Location: H2

**Invited Talk**

HL 42.1 Tue 12:30 H2

**MBE growth of topological insulator films and ARPES measurements** — •GREGOR MUSSLER, JÖRN KAMPMEIER, SVETLANA BORISOVA, and DETLEV GRÜTZMACHER — Peter Grünberg Institute 9, Research Center Jülich

In this talk, we will present our results on molecular-beam epitaxy (MBE) of three dimensional topological insulators (TI)  $\text{Bi}_2\text{Te}_3$ ,  $\text{Bi}_2\text{Se}_3$ , and  $\text{Sb}_2\text{Te}_3$ , as well as the ternary and quaternary alloys. By choosing proper growth parameters, single crystal epilayers with

smooth surfaces and interfaces at the atomic level are grown. ARPES scans show the Dirac cone for all three material systems, evidencing the TI behavior of the MBE-grown epilayers. Besides, we will also present results on transport experiments. Due to naturally occurring defects,  $\text{Bi}_2\text{Te}_3$  and  $\text{Bi}_2\text{Se}_3$  are n-type doped, whereas  $\text{Sb}_2\text{Te}_3$  is p-type doped. The ternary  $(\text{Bi,Sb})_2\text{Te}_3$  alloys show a change from n- to p-type doping for antimony concentrations between 25 - 40%. For these samples, we observed low bulk carrier concentrations, and features of surface carriers, such as weak antilocalization and Shubnikov-de Haas oscillations, were detected.