



Contribution ID: 23

Type: **Poster**

Investigating magnetism in 1T-NbSe₂

Wednesday, January 7, 2026 9:45 AM (30 minutes)

NbSe₂ is a transition metal dichalcogenide (TMDC) well known for having the highest superconducting transition temperature among all pristine TMDCs. While bulk NbSe₂ is only found in its 2H superconducting phase, it has been shown that 1T-NbSe₂ can be stabilized on a substrate through molecular beam epitaxy growth, with extremely different properties from the 2H phase. 1T-NbSe₂ is not superconducting, but a Mott insulator that exhibits localized magnetic moments as seen through Kondo resonances, and has recently been characterized as a spin liquid. However, no evidence of long-range magnetic order has been shown to date. In this work, we grown mixed phase 2H/1T-NbSe₂ thin films on YAlO₃ substrates using molecular beam epitaxy. We observe the onset of a sizeable magnetoresistance around 75 K, and a pronounced magnetic hysteresis at low temperatures, implying the existence of a long-range magnetic order. However, muon spin rotation experiments showed no presence of a strong magnetic transition, limiting the possible magnetic volume fraction of the film to be less than ~5 %.

email address

ryan.thompson@unifr.ch

Affiliation

University of Fribourg, Switzerland

Author: THOMPSON, Ryan (University of Fribourg)

Co-authors: Mr BRUNNER, Nicolas (University of Fribourg); Dr SARKAR, Subhrangsu (University of Fribourg); Dr SALMAN, Zaher (Paul Scherrer Institute); Prof. BERNHARD, Christian (University of Fribourg)

Presenter: THOMPSON, Ryan (University of Fribourg)

Session Classification: Wednesday Coffee Break & Poster

Track Classification: Categories: van der Waals experimental