



# TRR 80 Sonderseminar

Am Dienstag, den 14. Mai um 10:00 Uhr

spricht

***Prof. Dr. Valentin Taufour***

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über das Thema

***Suppressing ferromagnetism:  
How to do it? What does it tell us?***

I will review some of our efforts to study what happens when ferromagnets are squeezed until suppression of the magnetic order. Various interesting behaviors are observed experimentally in the temperature-pressure (T-p) phase diagrams of  $UGe_2$ ,  $LaCrGe_3$ , and  $CeTiGe_3$ ,  $LaCrSb_3$ . Namely, either the ferromagnetic-paramagnetic transition becomes of the first-order at a tricritical point before being suppressed such as in  $UGe_2$  [1,2], or transitions to modulated magnetic phases appear such as in  $LaCrGe_3$  [3,4] and  $CeTiGe_3$  [5]. We have shown that the addition of a magnetic field (H) can lead to new quantum critical points at the end of "wings" in the T-p-H phase diagram in both  $UGe_2$  and  $LaCrGe_3$  [5] or to quantum tricritical points in  $CeTiGe_3$ . Our careful study of the "wings" near the tricritical point reveal new rules that apply to the T-p-H phase diagram [6]. We discuss how our experimental T-p-H phase diagrams of  $UGe_2$ ,  $LaCrGe_3$ , and  $CeTiGe_3$  illustrate different strength of quantum fluctuations based on recent theoretical results [7]. I will also discuss how new promising compounds to study quantum ferromagnetism can be identified.

- [1] V. Taufour et al. Phys. Rev. Lett. 105, 217201 (2010).
- [2] H. Kotegawa et al. J. Phys. Soc. Jpn., 80, 8, 083703 (2011).
- [3] V. Taufour et al. Phys. Rev. Lett. 117, 037207 (2016).
- [4] U. S. Kaluarachchi et al. Nature Communications 8, 546 (2017).
- [5] U. S. Kaluarachchi et al. Phys. Rev. B 97, 045139 (2018).
- [6] V. Taufour et al. Phys. Rev. B 94 060410 (2016).
- [7] Belitz et al. Phys. Rev. Lett. 119 267207 (2017).

Gäste sind herzlich willkommen.

Der Vortrag findet im Seminarraum S-254, Institut für Physik,  
Universität Augsburg statt.

Gastgeber: Dr. Anton Jesche  
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