



# EINLADUNG zum IFP-SEMINAR

## Feeling the strain – tuning electronic nematicity towards quantum criticality

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Host: Silke Bühler-Paschen  
Termin: Mittwoch, 08. Jänner 2020, 16:00 Uhr  
Ort: Institut für Festkörperphysik, TU Wien  
Wiedner Hauptstraße 8-10, 1040 Wien  
Seminarraum DC rot 07 (roter Bereich, 7. OG)  
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### Abstract:

Electronic nematicity is a prominent feature in Fe-based superconductors, but is potentially also present in at least some cuprates, and heavy fermion superconductors. Being a possible common thread for unconventional superconductivity, the role of nematic fluctuations for superconductivity needs to be assessed. This calls for new techniques that allow for tuning nematicity continuously towards quantum criticality.

In the first part of this talk I will discuss how to disentangle the response of nematicity to strain components of different symmetry, and will show that both symmetric ( $A_{1g}$ ) and antisymmetric ( $B_{1g}$ ) strain are suitable means to tune the critical temperature of the nematic phase transition in Fe based superconductors.

In the second part of the talk, I will outline our recent experimental advances exploring the thermoelastic properties of these materials. In particular, the finite response of nematicity to strain causes anomalies in the elastocaloric effect as well as in the elastoresistivity which can be measured via an AC technique. These anomalies are proportional to the corresponding heat capacity anomalies and can thus be used to sensitively detect the subtle electronic phase transition.

Finally, I will show the doping dependence of the coefficients found for the strain dependence of the nematic transition temperature in Co doped  $BaFe_2As_2$  and discuss how these findings corroborate the importance of quantum critical fluctuations in this system.