



Das Institut für Materialchemie  
lädt im Rahmen des Seminars Materialwissenschaften ein  
zu einem Gastvortrag von

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***Dirac nodal lines in pure metals of beryllium and  
magnesium and its induced huge surface  
electron-phonon coupling effect***

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Beryllium is a simple alkali earth metal, but has been the target of intensive studies for decades because of its unusual electron behaviors at surfaces. Puzzling aspects include (i) severe deviations from the description of the nearly free electron picture, (ii) anomalously large electron-phonon coupling effect, and (iii) giant Friedel oscillations. The underlying origins for such anomalous surface electron behaviors have been under active debate, but with no consensus. Here, by means of first-principle calculations, we discover that this pure metal system, surprisingly, harbors the Dirac node line (DNL) that in turn helps to rationalize many of the existing puzzles. The DNL is featured by a closed line consisting of linear band crossings and its induced topological surface band agrees well with previous photoemission spectroscopy observation on the Be (0001) surface. We further reveal that each of the elemental alkali earth metals of Mg, Ca, and Sr also harbors the DNL, and speculate that the fascinating topological property of DNL might naturally exist in other elemental metals as well.

Donnerstag, 23. Mai 2019, 15:15 Uhr  
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