

Geometry, Physics, and Representation Theory  
Northeastern University

**Jim Halverson**  
NEU, Physics.

Wednesday, Dec 9, 12-1 pm, Lake 509.

**Connecting Gauge Sectors and Moduli Spaces of Elliptic  
Fibrations**

**Abstract.** In F-theory compactifications gauge sectors arise on seven-branes, the content of which is partially determined by the singular geometry of a family of elliptic fibrations with base a compact algebraic variety  $B$ . In this talk I will study the physics and mathematics associated to general members of the family. One result is that for most known  $B$ , a general member of the family is singular. This signals the presence of a geometric gauge group on the seven-brane, but the possibilities are quite limited; for example, non-perturbative realizations of  $SU(3)$  and  $SU(2)$  play an important role relative to other  $SU(N)$ . I will also try to explain why studying general members of the family is interesting from the point of view of the string landscape.