“What we do and what we say: Observing faculty practice through multiple research lenses”

ABSTRACT: I will present results from two studies we have conducted on faculty practice across the physics curriculum. In the first, we characterize workshop-style introductory classrooms through two complementary observational protocols: the Reform Teaching Observation Protocol assesses fidelity to reform-teaching philosophies, while the Teaching Dimension Observation Protocol records direct practice. Despite a common environment and core materials, there is significant variance across faculty, with intriguing dependence on course content. We also find that, despite a radical redesign of the classroom environment, instruction is primarily instructor-centered, avoiding reform-based practices for which the room is designed. Our second study interprets faculty presentation of traditional problems in the context of symbolic forms, a structure proposed to explain how physicists embed conceptual meaning in mathematics. We look at the extent to which verbal syntax agrees with the mathematical representation, as well as for differences across course level (i.e. does faculty discourse change as topics become more advanced). Both studies have strong implications for both teaching practice and physics education research at all levels of the curriculum.

Wednesday, November 14, 2012

4:15 pm – Room S-122, Sackler Sciences Center