Problematizing as “doing physics”
The importance of formulating questions and problems in students’ and physicists’ inquiry

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Physicists treat well-formulated problems as knowledge objects: we construct them, study them, and convince others to study them with us. The process of formulating, refining, and communicating problems and questions—a process I refer to problematizing—is an important part of physics. Yet problematizing has been understudied within philosophy of physics. Similarly, expectations and standards for students often state that “Science begins with a question” (NRC, NGSS Lead States), glossing over the important scientific work that takes place before there is a clear question.

In this talk, I discuss how, for physicists and students alike, science often begins not with a question or problem, but with a sense of unease or puzzlement. I provide examples of problematizing from the history of physics before turning to students’ problematizing. Through case studies of students engaging in science inquiry, I show that problematizing can emerge naturally in students’ inquiry in a range of settings, from elementary school classrooms to undergraduate physics courses. From there, I present possible ways to support students’ problematizing and discuss implications for instruction and directions for future research, both at the K-12 and undergraduate levels.