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**Ian Charlesworth\***, Department of Mathematics, University of California, Berkeley, 970 Evans Hall #3840, Berkeley, CA 94720-3840, and **Brent Nelson**. *Free Stein irregularity*.

I will speak on recent joint work with Brent Nelson. We introduce a quantity we term free Stein irregularity, which falls in the realm of the non-microstates approach to free entropy. It yields a (polynomial) algebra invariant which measures obstructions to the free difference quotients being well-defined as closable unbounded operators. I will motivate our introduction of free Stein irregularity, and discuss some of its properties and how it relates to the non-microstates free entropy dimensions. (Received August 29, 2019)