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University Drive, MS: 3F2, Fairfax, VA 22030. *Extremal finite subgraphs of the grid graph.*

For each $n \in \mathbb{N}$ we discuss and determine the maximum number of edges an induced subgraph of the grid graph \mathbb{Z}^d on n vertices can have. This involves work of Bollobás, Leader and Thomason to name a few. The more elementary the approach is, the more involved the arguments tend to be and vice versa. There seems to be some sort of “Heisenberg’s uncertainty principle” going on here between the elementariness of arguments and their shortness/simplicity. In this talk we will try to pinpoint the intricate ideas behind the reasons and explain what really is needed to obtain the results we want. – This work was in part inspired by an undergraduate student in computational biology some years ago. (Received July 26, 2017)