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*The geometry of homothetic covering and illumination*

At a first glance, the problem of illuminating the boundary of a convex body by minimal number of external light sources and the problem of economically covering a convex body by its smaller positive homothetic copies appear to be quite different. They are in fact two sides of the same coin and give rise to one of the important longstanding open questions in discrete geometry, namely, the Illumination Conjecture – also known as the Hadwiger Conjecture or the Covering Conjecture. In this talk, we discuss recent advances towards this conjecture and some approaches to potentially make further progress. Moreover, we describe some of our new results in this direction. This is joint work with Károly Bezdek (University of Calgary).