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Henry Cohn* (cohn@microsoft.com), One Memorial Drive, Cambridge, MA 02142, and **Yufei Zhao**. *The physics of error-correcting codes*.

In this talk, we'll explore how discrete models of physics shed light on error-correcting codes. The most remarkable codes are those that are universally optimal, in the sense of minimizing a broad class of energy functions. This corresponds to optimality of the binomial moments of the distance enumerator, which has been studied by Ashikhmin and Barg, and we extend their theory. We show many parallels with continuous physics, but some noteworthy differences: for example, whenever linear programming bounds prove that a code is universally optimal, removing any one codeword always yields another universally optimal code. (Received September 25, 2012)