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Hermitian-lifted codes.

Algebraic geometry codes, defined in the 1980s, have variants that are well suited to local recovery. In some applications, it is necessary to recover information by accessing only a few other positions (or nodes) rather than reading an entire received word. Being able to do in many different ways leads to greater availability of information. In this talk, we demonstrate the utility of the Hermitian curve in this scenario by defining Hermitian-lifted codes. Hermitian-lifted codes have the same evaluation set as one-point Hermitian codes, but the functions to be evaluated are not the usual ones. Instead, they are a special set of monomials which restrict to low degree polynomials on lines intersected with the Hermitian curve. As a result, the positions corresponding to points on any line through a given point act as a recovery set for the position corresponding to that point. This yields codes for local recovery of erasures with high availability and constant-bounded rate from the Hermitian curve. (Received September 14, 2020)