1112-05-559 **Ragnar Freij*** (ragnar.freij@aalto.fi), Department of Communications and Networking, PO Box 13000, FI-00076 AALTO, 00630 Helsinki, Finland, and **Thomas Westerbäck** and **Camilla Hollanti**. *Weight enumeration of cooperative locally repairable codes.* Preliminary report.

Cooperative locally repairable codes have recently gathered wide interest, both for their applications in large scale distributed storage systems, and for their purely mathematical properties. In this talk, we will analyze locally repairable codes from the perspective of the strong connection between linear codes and matroids, and more generally between arbitrary codes and polymatroids. Well known techniques to calculate Tutte and rank polynomials of matroids are applied to the weight enumeration polynomials on locally repairable codes, which in turn give results on the possible field sizes over which given localities can be achieved. We also consider a (to our knowledge) new generalization of locally repairable codes, where the repair can be performed on several different scales, further enhancing the robustness of a storage system. (Received August 11, 2015)