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Venkatesan Guruswami and **Mary Wootters*** (marykw@stanford.edu). *Repairing Reed-Solomon Codes.*

Reed-Solomon (RS) codes are often used in distributed storage. However, recently it's been observed that the traditional recovery algorithms for RS codes are substantially sub-optimal in this setting, and the quickly-developing field of regenerating codes has provided some much better solutions.

In this work, we show that, in fact, RS codes are much better for distributed storage than you might think! Our main result is that, in some parameter regimes, RS codes themselves are optimal regenerating codes, among MDS codes with linear repair schemes. Moreover, we give a characterization of MDS codes with good linear repair schemes which holds in any parameter regime, and which can be used to give non-trivial repair schemes for RS codes in other settings. (Received September 13, 2016)