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Mathematics and Compressed Sensing. Preliminary report.

The signals, images and other data live in a Hilbert space. This space is equipped with several useful basis needed for applications. Frames generalize the same concepts except they are redundant but there is flexibility in construction. The compressed sensing uses basis, frame and optimizing tools to recover the signal from a fewer measurements of the signal. We study a mathematical formulation of the problem and possible solutions. Some challenging problems are presented. (Received September 20, 2015)