RANDOM PARTIAL HADAMARD MATRICES AND LINEAR ERROR CORRECTING CODE

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ABSTRACT. Let A be a linear code, that is, a n*(n-k) matrix. Suppose that Ax is corrupted by anoise vector z and the assumption we make is that z is m-sparse , that is, the support of z has cardinality less than m. The problem is to reconstruct x from the data, which is the noisy output y=Ax+z. Thus y differs from Ax on at most m coordinates. A linear programming approach called the basis pursuit algorithm, was recently shown to be relevant for this goal (Chen-Donoho-Saunders) and (Candes-Tao).We will discuss different problems of reconstruction studied by Donoho, Candes and Tao,their relation with approximation theory and recent development.