

# Sparse Recovery From Superimposed Non-Linear Sensor Measurements

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## Abstract

We study the problem of sparse parameter estimation via wireless sensor networks. Such networks typically encompass a large collection of spatially distributed sensor units, acquiring individual measurements of a sparse source vector which are simultaneously transmitted to a central receiver. Since this sensing process is usually imperfect (e.g., caused by low-quality sensors), the receiver measures a superposition of non-linearly distorted signals. Based on a rigorous mathematical framework, we show that efficient sparse recovery from a very few measurements is still feasible in this setup, using a simple Lasso estimator. Moreover, we discuss several practical implications and extensions of our approach. This is joint work with Peter Jung.