1116-65-2912   **Mila Nikolova*** (`nikolova@cmla.ens-cachan.fr`), CMLA CNRS - ENS Cachan, 61, avenue du Président Wilson, 94235 Cachan, France. *Least squares regularized or constrained by L_0: relationship between their global minimizers.* Preliminary report.

When looking for a sparse solution of an under-determined linear system, two desirable models are to find a global minimizer of the least squares regularized by L_0 pseudo-norm using a trade-off parameter β or constrained by L_0 (known also as the K-sparsity constrained problem).

We analyse in depth the relationship between the sets of the global minimizers of these two nonconvex (combinatorial) models. At least partial equivalence between these problems is established in the sense explained next. There exists a strictly decreasing sequence of critical values $\{\beta_k\}$ that partitions the positive axis into a certain number of intervals. For every β inside an interval, there is a K such that the regularized problem and the K-constrained problem share exactly the same set of optimal solutions. Under conditions, quasi complete equivalence holds (except for the points $\beta = \beta_k$). We will present all important points concerning this partial or quasi complete equivalence.

Small-size exact numerical tests illustrate the theoretical findings. By way of conclusion, the K-sparsity problem offers wider possibilities which is not necessarily an advantage. (Received September 23, 2015)