

This toolbox solves the BLASSO problem for 1-D and 2-D super-resolution problem using an enhanced version of Frank-Wolfe.

The algorithm alternates between:

- a Frank-Wolfe step to add a new dirac location (which is the matching pursuit step of correlation maximization)
- a non-convex update step on the (amplitude, positions) (with an initialization using a classical LASSO).

It is guaranteed to converge even without the non-convex step, but this non-convex step typically leads to termination in a finite number of steps (which in practice matches the number of spikes in the measure to recover when noise and regularization are low).

References

This algorithm was first described in:

Kristian Bredies and Hanna Pikkariainen. Inverse problems in spaces of measures. ESAIM: Control, Optimisation and Calculus of Variations, 19(1):190-218, 2013.

and used extensively in:

N. Boyd, G. Schiebinger, B. Recht [The Alternating Descent Conditional Gradient Method for Sparse Inverse Problems](#), 2015.

with a [Julia implementation](#).

For an modern view on Frank-Wolfe (including $1/k$ rate on the objective), see:

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