A LSQR-type method provides a computationally efficient automated optimal choice of regularization parameter in diffuse optical tomography

**Matlab Codes\* :** (requires [NIRFAST](http://www.google.com/url?q=http%3A%2F%2Fwww.dartmouth.edu%2F%257Enir%2Fnirfast%2F&sa=D&sntz=1&usg=AFQjCNGy0Qj1Ase3wF2EPCnMRDNOteJ80A))

#Matlab Implementation of LSQR based algorithm (proposed): reconstruct\_cw\_lsqr.m (requires objective function: opt\_lambda\_cw.m and Lanczos Bidiagonalization function: lsqr\_b\_hybrid.m\*\*)

#Matlab Implementation of L-curve based algorithm (traditional method): reconstruct\_cw\_l\_curve.m (requires Regularization Tools\*\*)

#Matlab Implementation of GCV based algorithm (traditional method): reconstruct\_cw\_OGCV.m (requires Regularization Tools\*\*)

#Matlab Implementation of MRM based algorithm (traditional method): reconstruct\_stnd\_cw\_OMRM.m

This Matlab code is used as part of the work presented in:

Jaya Prakash and Phaneendra K. Yalavarthy, “A LSQR-type method provides a computationally efficient automated optimal choice of regularization parameter in diffuse optical tomography," Medical Physics, 40(3), 033101 (2013).

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\* The code does not come with any guarantees and can be freely used for any purpose.

\*\* Adapted from Regularization Tools ([Version: 4.1](http://www.google.com/url?q=http%3A%2F%2Fwww2.imm.dtu.dk%2F%257Epch%2FRegutools%2F&sa=D&sntz=1&usg=AFQjCNHIl4GNUv_7xBKYfGdYoZOWRDFPHQ))

The codes for this can be found at : [https://github.com/Medical-Imaging-Group/A-LSQR-type-method-provides-a-computationally-efficient-automated-optimal-choice-of-regularization-p](https://www.google.com/url?q=https%3A%2F%2Fgithub.com%2FMedical-Imaging-Group%2FA-LSQR-type-method-provides-a-computationally-efficient-automated-optimal-choice-of-regularization-p&sa=D&sntz=1&usg=AFQjCNFNHlKx-lAdAAGU5j6iFoAbXzRlLg)