

# Numerical Analysis of Approximate Deconvolution Models of Turbulence

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## Abstract

If the NSE are averaged with a local, spacial, convolution type filter the resulting system is not closed due to the term  $g * (uu)$ . A deconvolution operator  $G_N$  is one which satisfies:

$$u = G_N(g * u) + O(\delta^{2N+2}) \quad (0.1)$$

where  $\delta$  is the filter width. This yields the closure method:

$$g * (uu) = g * (G_N(g * u)G_N(g * u)) + O(\delta^{2N+2}) \quad (0.2)$$

We will review several solutions to the ill-posed deconvolution problem, present an "optimal" deconvolution procedure and present numerical analysis and numerical experiments with it.

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