

# Lecture 15: Stability of Tikhonov Regularization

## Alex Rakhlin

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### Description

We briefly review the generalization bounds of last lecture before turning to our main goal -- using the stability approach to prove generalization bounds for Tikhonov regularization in RKHS. In order to apply the bounds, we need to prove that Tikhonov regularization is uniformly stable with  $\beta = O(1/n)$ , and also to bound the loss function. In the process, we will gain additional insight into the mathematics of optimization and RKHS.

### Suggested Reading

- O. Bousquet and A. Elisseeff. **Stability and Generalization**. Journal of Machine Learning Research, to appear, 2002.
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