Estimation of error variance via ridge regression

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Abstract: We propose a novel estimator of error variance and establish its asymptotic properties based on ridge regression and random matrix theory. The proposal is valid under both low- and high-dimensional models, and performs well not only for non-sparse cases but also for sparse ones. We assess the finite-sample performance of the proposed method in an intensive numerical study, which indicates that it is promising compared with its competitors in many interesting scenarios.