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Daniel Vasiliu* (daniel.vasiliu@cnu.edu), Department of Mathematics, Christopher Newport University, 1st University Place, Newport News, VA 23606. *On a hybrid method for variable selection.*

A problem of absolute importance for high-dimensional statistical modeling is the variable selection with simultaneous estimation. The methods developed to address this problem are based on geometric analysis of data and optimization of the main objective with constraints. In this respect the ridge regression method (Hoerl & Kennard 1998) has prediction advantages over the lasso method and the elastic net regularization (Zou & Hastie 2005) shows further improvement in many situations. The lasso method is a penalized least squares method imposing a ℓ_1 - penalty on the regression coefficients whereas the ridge regression method imposes a ℓ_2 -penalty. The elastic net method combines the two types of penalizations in a linear way and presents computationally demonstrated advantages for improving the statistical prediction. The adaptive elastic net method (Zou & Zhang 2009) combines linearly the ℓ_1 and ℓ_2 penalties. The main benefit from this onset is the fact that the solution achieved has oracle properties. We propose a new form of penalization for the variable selection problem and study its statistical properties in the context of previously developed models. (This research is in collaboration with T. Dey from the College of William and Mary.) (Received September 22, 2011)