

**University of California, Irvine  
Statistics Seminar**

***Bayesian Sparse Regression via Cluster Shrinkage Parameters***

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Join via Zoom: <https://uci.zoom.us/j/99193076115>**

In the analysis of high-dimensional data, variable selection is essential to identify a meaningful subset among all relevant variables potentially associated with a target outcome. In a Bayesian linear regression framework, variable selection can be performed through a suitable regularizing prior distribution on the regression coefficients. In particular, two main types of priors are usually employed to accomplish variable selection: the spike-and-slab prior and continuous scale mixtures of Gaussians. In this talk, I will first present these two approaches, discussing their advantages and disadvantages. Then, I will propose a discrete mixture of continuous scale mixtures prior as an alternative approach, outlining the connections between the different approaches. The proposal drastically reduces the number of model parameters and further allows the sharing of information across coefficients of similar magnitude, improving the shrinkage of the model coefficients. I will discuss the theoretical properties of the proposed prior, and then I will illustrate the achieved estimation and prediction performance with simulated data in a linear regression setting. Finally, I will compare the different shrinkage priors in a problem of activation-detection for fMRI data experiments.