# Sparsistent Learning of Varying-coefficient Models with Structural Changes (ID: 538)

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**Problem:** Estimate unknown number of structural changes in linear regression model and perform variable selection

**Algorithm:** **1)** Estimate structural changes with TV penalty

$$\text{argmin}_\beta \sum_{i=1}^{n} (Y_i - \mathbf{X}_i' \beta(t_i))^2 + 2\lambda_2 \sum_{k=1}^{p} ||\beta_k||_{\text{TV}}$$

**2)** Perform model selection with Lasso

$$\text{argmin}_\gamma \sum_{t_i \in \hat{\mathcal{B}}_j} (Y_i - \mathbf{X}_i \gamma)^2 + 2\lambda_1 ||\gamma||_1$$

**Properties:**
- consistent estimation of structural changes
- consistent model selection

**Applications:** time-varying graphical model selection