Three solutions theorem for p-Laplacian problems with a sign-changing singular weight and its application

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This is a joint work with Seong-Uk Kim and Yong-Hoon Lee. In this talk, we prove Amann type three solutions theorem for one dimensional p-Laplacian problems with a sign-changing singular weight function. To prove this theorem, we define a strong upper and lower solutions and compute the Leray-Schauder Degree on a newly established weighted solution space. As an application, we consider the combustion model and show the existence of three positive radial solutions on an exterior domain.