

Research Highlight: Degenerate p-Laplacian equations

Work of Associate Professor Chua Seng Kee

In a recent paper, A/P Chua studies the problem of solving some general integral formulas and then applies the conclusions to obtain results about the existence of weak solutions of various degenerate p-Laplacian equations. It adapts Variational Calculus methods and the Mountain Pass Lemma without the Palais-Smale condition, and it uses an abstract version of Lions' Concentration Compactness Principle II.

The paper unifies the technique for various degenerate p-Laplacian equations. The result is new even in the classical case when the associated vector satisfies Hormander's conditions.

Reference:

- S.-K. Chua and R. L. Wheeden, "Existence of weak solutions to degenerate p-Laplacian equations and integral formulas", *Journal of Differential Equations* 263, (2017), 8186-8228.