

**A  $p$ -LAPLACIAN OPERATOR  
WITH ORTHOTROPIC STRUCTURE**

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In this seminar, we discuss a variant of the  $p$ -Laplacian operator, which arises as the first variation of a suitable Dirichlet integral. The corresponding elliptic equation is much more degenerate/singular than that for the standard  $p$ -Laplacian operator and regularity of solutions appears to be a difficult issue.

At first, we will give some motivations (linked to optimal transport) to consider this kind of equations. Then we will present some regularity results for the gradient of solutions (differentiability, boundedness and continuity).

The results presented are contained in some papers in collaboration with Pierre Bousquet, Guillaume Carlier and Vesa Julin.