On a family of torsional creep problems involving rapidly growing operators in divergence form

Maria Fărcăşeanu

Department of Mathematics, University of Craiova & Research group of the project PN-III-P4-ID-PCE-2016-0035, "Simion Stoilow" Institute of Mathematics of the Romanian Academy

farcaseanu.maria@yahoo.com

Let $\Omega \subset \mathbb{R}^N$ $(N \geq 2)$ be a bounded domain with smooth boundary and $\{p_n\}$ be a sequence of real numbers converging to $+\infty$ as $n \to \infty$. For each integer $n > 1$ we define the function $\phi_n(t) = p_n|t|^{p_n-2}te^{|t|^{p_n}}$, for all $t \in \mathbb{R}$, and we prove the existence of a unique nonnegative variational solution for the problem $-\text{div}\left(\frac{\phi_n(|\nabla u(x)|)}{|\nabla u(x)|}\nabla u(x)\right) = \phi_n(1)$, when $x \in \Omega$, subject to the homogeneous Dirichlet boundary condition. Next, we establish the uniform convergence in Ω of the sequence of solutions for the above family of equations to the distance function to the boundary of Ω. This talk is based on some recent results obtained in collaboration with Mihai Mihăilescu. This presentation is partially supported by CNCS-UEFISCDI Grant No. PN-III-P4-ID-PCE-2016-0035.