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Michail E Filippakis* (mfilip@unipi.gr), University of Piraeus, Department of Digital, Systems, 126 Grigoriou Labraki Str., Piraeus 18532, 18532 Piraeus,, Greece. *Multiple and nodal solutions for nonlinear equations with a nonhomogeneous differential operator and concave-convex term.*

In this paper we consider a nonlinear parametric Dirichlet problem driven by a nonhomogeneous differential operator (special cases are the p -Laplacian and the (p, q) -differential operator) and with a reaction which has the combined effects of concave $((p-1)$ -sublinear) and convex $((p-1)$ -superlinear) terms. We do not employ the usual in such cases AR-condition. Using variational methods based on critical point theory, together with truncation and comparison techniques and Morse theory (critical groups), we show that for all small $\lambda > 0$ (λ is a parameter), the problem has at least five nontrivial smooth solutions (two positive, two negative and the fifth nodal). We also prove two auxiliary results of independent interest. The first is a strong comparison principle and the second relates Sobolev and Hölder local minimizers for C^1 functionals. The publication of this paper has been partly supported by the University of Piraeus Research Center. (Received September 08, 2015)