# Parametric singular problems with an indefinite perturbation

Krzysztof Bień, Witold Majdak, and Nikolaos S. Papageorgiou

The aim of this presentation is to study the following parametric Dirichlet problem driven by a nonhomogenous differential operator:

$$
\begin{cases}
-\operatorname{div} a(Du) = \lambda\big[\xi(z)u^{-\eta} + f(z,u)\big] & \text{in } \Omega, \\
u = 0 & \text{on } \partial\Omega \\
u > 0,\ \lambda > 0,\ 0 < \eta < 1,
\end{cases}
\qquad (P_\lambda)
$$

where $\Omega \subseteq \mathbb{R}^N$ is a bounded domain with a $C^2$ boundary $\partial\Omega$. In the parametric reaction we have the competing effects of a singular term and of a superlinear perturbation which is sign-changing. Using variational tools together with truncation and comparison techniques we show that for all small values of the parameter the problem has at least two smooth solutions. The obtained results come from the paper [1].

## References

[1] K. Bień, W. Majdak, N.S. Papageorgiou, *Parametric singular problems with an indefinite perturbation*, The Journal of Geometric Analysis 34 (2024), Article no. 103.

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| **First Author:** | Krzysztof Bień |
| **Affiliation:** | *Faculty of Applied Mathematics, AGH University of Krakow* |
|  | *30-059 Kraków, Poland* |
| **e-mail:** | `krbien@agh.edu.pl` |

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|---|---|
| **Second Author:** | Witold Majdak |
| **Affiliation:** | *Faculty of Applied Mathematics, AGH University of Krakow* |
|  | *30-059 Kraków, Poland* |
| **e-mail:** | `majdak@agh.edu.pl` |

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| **Third Author:** | Nikolaos S. Papageorgiou |
| **Affiliation:** | *Department of Mathematics, National Technical University* |
|  | *Athens 15780, Greece* |
| **e-mail:** | `npapg@math.ntua.gr` |