

# A Mixed Finite Element Method for the Ramberg-Osgood Bar

Piotr Skrzypacz<sup>1</sup> Friedhelm Schieweck<sup>2</sup> Dongming Wei<sup>3</sup>

We consider the equilibrium equation of an axially loaded Ramberg-Osgood bar. The model is based on a two-point boundary value problem for equations with implicitly given coefficients. This novel class of equations which are related to modern materials like graphene requires a special approach. We construct a new scheme based on mixed finite elements, significantly improve a priori error estimates from [1], and provide simulations to justify our theoretical results.

## References:

[1] D. Wei, and Mohamed B. M. Elgindi. Finite Element Analysis of the Ramberg-Osgood Bar, American Journal of Computational Mathematics, 3: 211–216, 2013.

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<sup>1</sup> Nazarbayev University, School of Science and Technology, Mathematics Department, Astana, Kazakhstan,  
[piotr.skrzypacz@nu.edu.kz](mailto:piotr.skrzypacz@nu.edu.kz)

<sup>2</sup> Otto von Guericke University of Magdeburg,  
[schiewec@ovgu.de](mailto:schiewec@ovgu.de)

<sup>3</sup> Nazarbayev University in Astana,  
[dongming.wei@nu.edu.kz](mailto:dongming.wei@nu.edu.kz)