

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

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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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