

Nonsmooth Problems with Applications in Mechanics  
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## Buckling of the Gao Beam Under Axial Loadings

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**Abstract:** This contribution analyzes static buckling problem for the nonlinear beam model which was published by D.Y. Gao in 1996. But only pure buckling problems are considered, i.e. the vertical load is omitted here. Using mathematical methods, new results regarding the post-buckling solution are presented, particularly the existence and number of solutions. The determination of the relationship between the classical Euler critical load and the corresponding critical load of the Gao beam is also important. Some computational results are introduced for fixed axial loading. Finally, we discuss the effect of input parameters on the results, which leads to interesting observations.