# Numerical Application of Plastic Hinges Development in a Circular Ring

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## Abstract

Circular ring is the most popular specimen in industry. The location of a crack in a circular ring can strongly affect the sequence of plastic hinge development which in turn affects stability of a circular ring which has been obtained theoretically in Young [1] but not any numerically. The primary purpose of this work is to demonstrate that the location of a crack can strongly affect the sequence of plastic hinge development which in turn affects crack stability of a structure by using the 2-D boundary element method. A specific example of an elastic-plastic ring loaded with diametrically opposite concentrated loads is employed to investigate these effects. In fact, the ring will collapse if the number of plastic hinges is up to four. The results show the potential application of the boundary element method in this project.

Keyword：Boundary Element Method, Plastic Hinge