Application of damage mechanics to analysis of concrete structure subjected to monotonic loading

Annin Hudaya, author

Deskripsi Lengkap: https://lib.ui.ac.id/detail?id=80913&lokasi=lokal

----

Abstrak

ABSTRACT
The definition, purposes and applications of Damage Mechanics, which is relatively newly developed, is introduced and reviewed. Initially and mostly, Damage Mechanics relates to metal materials. The appearance of micro cracks due to the application of external load and their propagations cause damage to the material. This paper discusses and reviews Damage Mechanics when applied to concrete. A mathematical model of concrete subjected to tension using Continuum Damage Mechanics Theory proposed by Jean Lemaitre and Jacky Mazars in. 1982 is presented.

This initial model, which is called Scalar Damage Model, even relatively simple in the formulation but gives quite good result to model the concrete in tension. This can be seen from the comparison between the numerical and experimental results done by them at laboratory in Cachan, France. Application of the initial model to analysis of reinforced concrete beam of three-point flexion subjected to monotonic loading is presented and evaluated. By using the initial model, the damage evolution, stress evolution and flexural rigidity evolution of the observed beams can be reviewed. The possibility of the application of the initial model to analysis of reinforced concrete beam in three-point flexion subjected to cyclic loading is also reviewed.