

Phase-Field Regularized Cohesive Zone Model: Recent Developments

Tushar Kanti Mandal^{1,*}, Vinh Phu Nguyen¹, Jian-Ying Wu²

¹ Department of Civil Engineering, Monash University, Clayton, Victoria 3800, Australia. * Email: tushar.mandal@monash.edu

² State Key Laboratory of Subtropical Building Science, South China University of Technology, 510641 Guangzhou, China.

ABSTRACT

The phase-field approach has proved to be promising for modeling fracture initiation and propagation in solids [1, 2]. This contribution discusses recent developments of the so-called length scale insensitive phase-field regularised cohesive zone model (PF-CZM) proposed in [3, 4]. First, PF-CZM is compared with gradient enhanced damage models [5, 6] for static quasi-brittle fracture to highlight the intrinsic differences. Second, some interesting dynamic brittle fracture phenomena such as crack arrest, crack instabilities are presented in the light of PF-CZM capability to model such complex dynamics problems [7]. Finally, extension of this method to incorporate multi-field fracture involving hydrogen induced cracking and thermal shock fracture are outlined.

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