Implementasi metode PPR dalam mengestimasi error meh studi kasus: pelat lentur dengan elemen MITC

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Abstrak

Salah satu metode pemulihan solusi gaya dalam metode elemen hinggayang paling baru adalah metode Polynomial Preserving Recovery (PPR) yang diperkenalkan oleh Zhang (2004). Metode PPR merupakan metode pemulihan superconvergent dengan menggunakan patch sebagai media perhitungan seperti yang juga digunakan dalam metode Superconvergent Patch Recovery (SPR) yang sudah lebih dulu dikenal sebagai metode pemulihan dengan kinerja bagus.
Uji numerik implementasi metode tersebut perlu dilakukan dalam mengestimasi error metode elemen hingga untuk pelat lentur dengan elemen MITC. Dalam penelitian ini uji numerik akan dilakukan dengan penghalusan jaringan elemen (mesh) tipe-h secara seragam dan adaptif. Hasil pengujian tersebut akan dibandingkan dengan tiga metode pemulihan gaya dalam lainnya yaitu metode SPR, metode REP, metode rata-rata langsung, dan metode proyeksi.
Program utama yang akan digunakan dalam penelitian ini untuk melakukan uji numerik dimaksud adalah program UI-FEAP yang telah disertai subrutin formulasi elemen MITC dan Error Estimator Z2 yang ditulis dalam bahasa FORTRAN hasil penelitian peneliti lain sebelumnya. Penulis menambahkan subrutin yang terkait dengan perhitungan metode PPR.
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A numerical study of the implementation of this method shall be carried out to estimate error in finite element analysis using MITC element. In this research, the numerical study will be performed by both uniform and adaptive h type mesh refinement. The result will be compared with three other recovery methods, i.e. SPR method, REP method, averaging method, and projection method. The main program to be used in the numerical study will be the UI-FEAP program, which has been enriched with MITC and Z2 error estimator subroutines written in FORTRAN programming language by other researchers. The subroutines related to PPR method shall be added in this regard.;One of the newly-published recovery methods in finite element method is the Polynomial Preserving Recovery (PPR) introduced by Zhang (2004). It is a superconvergent recovery method using patch as recovery media as done by Superconvergent Patch Recovery (SPR), which has been well known as a good recovery method.
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