Mathematical Physics

Extended Hamilton's principle

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Hamilton's principle is extended to have compatible initial conditions to the strong form. To use a number of computational and theoretical benefits for dynamical systems, the mixed variational formulation is preferred in the systems other than particle systems. With this formulation and the Rayleigh's dissipation function, we could have all the pertinent initial/boundary conditions for both conservative and non-conservative dynamical system. Based upon the extension framework of Hamilton's principle, the numerical method for representative lumped parameter models is also developed through applying Galerkin's method to time domain with the discussion of its numerical properties and simulation results.

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