Solution of the Lyapunov matrix equation for a system with a time-dependent stiffness matrix - DTU Orbit (24/12/2018)

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The stability of the linearized model of a rotor system with non-symmetric strain and axial loads is investigated. Since we are using a fixed reference system, the differential equations have the advantage to be free of Coriolis and centrifugal forces. A disadvantage is nevertheless the occurrence of time-dependent periodic terms in the stiffness matrix. However, by solving the Lyapunov matrix equation we can formulate several stability conditions for the rotor system. Hereby the positive definiteness of a certain averaged stiffness matrix plays a crucial role.

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