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Title EC 135 Rotorcraft System Identification -
Estimation of Rigid Body and Extended Models from Simulated Data

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Abstract

At DLR, a new Active-Control-Technology/Flying Helicopter Simulator is being developed based on EC 135 helicopter. Accurate derivative models of EC 135 helicopter are required for the design of the model following control system. In the investigations reported in this document, system identification techniques are applied to obtain 6 DOF rigid body and 8 DOF extended models from EC 135 simulated data. Main rotor dynamics are explicitly included in estimation model and their effects on the helicopter on- and off-axis response are investigated. Results from the identified models are presented and the obtainable benefits from the use of 8 DOF model are highlighted.