

**A Non-Linear Simulink Simulation
of a
Large, Flexible Aircraft – FLEXSIM**

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This directory (folder) contains the files and documentation for a Simulink simulation (FLEXSIM) of a large-flexible aircraft similar to the Rockwell B-1.

FLEXSIM has been developed to provide a benchmark or testbed to advance the study of flexible-aircraft dynamics, as well as to support research into system identification and control of flexible aircraft. As such, it is being made available as shareware in the public domain. A simulation description and user's manual is included here, along with the model and data files.

As described in the documentation, the non-linear simulation includes all six rigid-body degrees of freedom plus five elastic degrees of freedom (3 symmetric and 2 anti-symmetric flex modes); rigid-elastic aeroelastic coupling; gained-scheduled longitudinal, lateral, and directional stability-augmentation system's, and gain-scheduled structural-mode control systems. The control systems are based on those on the B-1, but have been adjusted to better meet our research objectives.

If you or a colleague can use FLEXSIM in your research, that would be great. And if you do, I'd love to hear about it. I hold the copyright, but it is available for use in the public domain with appropriate credit, please.

Finally, please note that FLEXSIM is a research simulation, and its successful use requires the user to be familiar with the Simulink tool as well as modeling in Simulink. Also, FLEXSIM was developed in MATLAB V. 8.0 (R2012b), and has not been tested on other versions.

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