C

PROGRAM FILE DEFINITIONS

Both the RKF and TSI propagator architectures were presented in Chapter 7(Figures 7.12 and 7.13 respectively). These included many different operation blocks. Each block is either a separate class, a combination of a header and source file (without it being a class), a function of either of these files or a function in the main file (MAVPropagator). The different files that include several blocks are MAVPropagator.h/.cpp, TaylorSeriesIntegration.h/.cpp, ascentDragForce.h/.cpp and ascentStateDerivativeFunction.h/.cpp, where this last file is also a class. The functions that will be implemented in these files are mentioned in Table C.1 all other blocks are described in Table C.2.

Table C.1: Large program files and included functions.

MAVPropagator	**TaylorSeriesIntegration**	**ascentStateDerivativeFunction**
Update current state	Compute auxiliaries	Compute current spherical state
Integration step	Thrust acceleration in B-frame	Compute gravitational acceleration
	Compute Taylor coefficients	Compute thrust and drag acceleration
ascentDragForce	Store state Taylor coefficients	Transfer to inertial frame
Compute speed of sound and Mach number	Initial step-size	Compute total acceleration
	Provide Taylor series expansion	Compute mass flow rate
	Estimate the max. trunc. error	
Compute drag force	Taylor series expansion incl. trunc. error	

Table C.2: Separate function files

Block	**Kind of file**
Planet characteristics	Class
Vehicle characteristics	Class
Auxiliary equations, derivatives and functions	Class
Current state and time	Class
Basic recurrence relation	Header and source
Full set of recurrence relation	Header and source
Determine next step-size	Header and source
Compute local air temperature	Header and source
Compute local air density	Header and source
Compute drag coefficient	Header and source