ExoVista Change Log

V2.2
March 23, 2023
Fixed a bug in the output of stellar coordinates.
Added phase angle to the planet data listed in the FITS files.
Added a version number line to the FITS files to allow backward-compatibility of post-processing scripts.
Added transit and eclipse detection.
Added a fifth plot for planet trajectories to readfits.py.
Added printing of transit and eclipse times to readfits.py.
Shifted the N-body integrator from Python to C++ to speed up integration with transit detection.
Updated post-processing scripts to handle multiple code versions.
Added functionality to readfits.py to reenter the FITS file name or number if an error occurs.
Added functionality to ExoVistaSystem.py to prompt for an input filename, accept one as a command line argument, and check for the correct "Star, Planets, Disks" format.
Set up ExoVistaSystem.py to read the number of disk components from the input file.
Fixed a bug in the coordinate transformations.
Fixed the parameters of the added Earth twins.
Adjusted the Earth twins to zero eccentricity so that the starting phase angle would be exactly 90 degrees.
Ensured generate_scene() would report parameters continuing through the desired maximum time. (Note this means there will always be multiple timesteps in the output.)
Fixed a potential bug in coordinate list handling.
Changed solar_system.dat from ID -1 to ID 999 for formatting reasons.
Fixed a bug in handling the Earth twin in load_scene.py and readfits.py.
Fixed a bug that prevented the seeded RNG from returning consistent results.
Updated the user guide and made various revisions for clarity.

V2.1
February 2, 2023
Added an RNG "seed" parameter to defaults.py.
Added an "eecprob" parameter to defaults.py that sets the overall likelihood that a planet in the EEC bounding box is in fact an EEC. (Default: 1.0.) Also works if different EECs have different bounding boxes.
Added PDF versions of the User Guide and Change Log.
Split defaults.py into a constants.py parameter list containing values that should not be changed, and a settings.py dataclass containing all of the values that should be user-settable.
Added various parameters to the Settings dataclass: planet parameter limits emin/emax, imin/imax, sysimin/sysimax, sysPAmin/sysPAmax; also disk particle size minsize/maxsize; also all of the hard-coded disk profile parameters.
Cleaned up the variable lists in constants and settings.
Added a 10-object target list for testing purposes.

Replaced the file-based MyRng with a seeded Numpy RNG.

Removed the unused sag13_eta_grid() function from generate_planets.py.

Removed the wrapper function for generate_scene() from ExoVista.py.

Added a total iteration cap of 200 on the planet creation loop. (Adding a massive planet can render multiple small planets unstable, decreasing the total planet count. A planet added on the next iteration will reset the "non-increasing" step count without a net increase in planet count.)

Tested the stability of the longitude (as opposed to argument) of periastron at low inclinations.

Modified readfits.py to not output the phase curve plot if there is only one timestep in the FITS file.

Moved all of the user controls in readfits.py to the beginning of the script.

Created a basic user interface for readfits.py to select a FITS file from the command line.

Updated the documentation.

V2.0.1
January 27, 2023
Tested load_scene.py on v1.3 outputs.

Changed the file read by the MyRNG routine from 10 million random numbers to 1 million in order to comply with Github's file size limits.

Added change log.

Added README instructions.

V2.0
January 26, 2023
First public Python release.