

# **AE-9/AP-9 Radiation Belt Model**

## **Release Notes**

**Version 1.03.001**

**September 20, 2012**

### **Software Changes**

- Headers in output files for combined plasma and high energy particle flux files have been corrected to identify flux as integral and to output discrete energy levels.
- In the GUI application, any number of dose depth values can be defined.
- In the GUI application, the electron and proton energy lists may be customized (except for the legacy models).
- In the GUI application, ‘plasma’ energy levels can now be included or excluded from the energy lists, by toggling a checkbox.
- Orbit propagation utilizing TLE format input files will now properly handle TLE inputs having ‘thrust’ card specifications.
- In the GUI application, the model run progress indicator has been updated to more accurately detect and display completion of model runs.
- Users can now save and reload (and therefore reuse) settings of editable energy and dose depth lists.
- Tooltips now reflect currently selected units of the corresponding data entry fields.
- The Linux release-mode build was modified to add desired optimization parameters `-O2`, `-NDEBUG`
- A new command-line tool input ('Epoch') was added to support user override of the default epoch. The model default behavior is to use the first date/time in the ephemeris as start epoch. By allowing override of this behavior, the user is able to break up long model runs by time for distributed processing.
- Dose output files now contain header entries for detector type, detector geometry and use of nuclear attenuation mode.

- SM is now accepted as an abbreviation for Solar Magnetic coordinate system in command-line tool input files. SSM will continue to be supported.
- Output files for AE-8 electron flux now correctly describe units as /MeV.
- The Kepler orbit propagator now correctly accepts zero values for eccentricity.
- Output files are now closed after the write for each time interval and subsequently re-opened to write each time interval of data. This eliminates an issue with running out of file handles on some systems.
- A precision limit of 3 decimal places has been removed for energy and dose depth outputs.