## 4.9.4

*Applicable User's Manual: GTD 4.9.4*

**Modifications**

- Fixed a ray-tracing bug in very specific cases where rays bounced off cutters instead of passing through them.

## 4.9.3

*Applicable User's Manual: GTD 4.9.0*

- Fixed a bug on polar diagrams: low dB values were not in the right color.

## 4.9.2P2

*Applicable User's Manual: GTD 4.9.0*

**Modifications**

- Fixed a ray-tracing bug in very specific cases where rays bounced off cutters instead of passing through them.

## 4.9.2P1

*Applicable User's Manual: GTD 4.9.0*

No modification

## 4.9.2

*Applicable User's Manual: GTD 4.9.0*

No modification

## 4.9.1

*Applicable User's Manual: GTD 4.9.0*

**Modifications**

*Far Field module*

- Correction of the routine getting the reflected rays on cones

- Improve the robustness of the function getting the reflected rays on antennas
- Correction of the routine getting the diffracted rays (rays impacting on the last part of the edge were missing)

*All modules*

- Adapt tolerance parameter value to better capture the diffracted rays (some rays were missing on an Antenna defined with focal compared to an Antenna with focus).

## 4.9.0

*Applicable User's Manual: GTD 4.9.0*

**New feature**

- GTD will automatically convert the generated PS files to PDF if a ps2pdf executable is defined in environment variable GTD_PS2PDF.

## 4.8.3P1

*Applicable User's Manual: GTD 4.5.2*

**Corrections**

- Bug fix in the SDS/HDF5 library (h5 close on Windows)

## 4.8.3

*No Change. Applicable User's Manual: GTD 4.5.2*

## 4.8.0

*No Change. Applicable User's Manual: GTD 4.5.2*

## 4.7.0

Far-Field results have been consolidated with the optimisation of curved interactions (multiple solution, correction of wrong double solution at 360° of a curved edge, improvement of multiple solutions management)

## 4.5.2

**Major Updates**

- Beam management
- **NEW FAR FIELD MODULE:**

  The Far Field Antenna Patterns are now included in the SYSTEMA-GTD package, including Theta / Phi cuts plots and Polar diagrams.

**Minor Updates**

- New analytical (or semi-analytical) algorithms for path correction

**Corrections**

- Small error in diffraction coefficients
- Curvatures of diffracted field by curved edges not correct
- Diffraction local frame not always well oriented
- Diffraction edge normal of reflectors not well oriented

## 4.5.1

First GTD V4 release

Based on the **Systema V4** framework, Astrium has developed an application for solving antenna's decoupling and evaluating the electromagnetism power on specific targets or apertures. Based on the General Theory of Diffraction (GTD), this tool uses a corrected forward ray-tracing technique which is particularly efficient for solving antennas - structure interactions in the high frequency domain.

The main features of Systema - GTD are:

- The GTD tool is able to model all main antennas currently used on satellites by several means. It offers a database of theoretical antennas (standard feeds, cardioids) and the import of custom profiles (Measured or Spherical Wave Expansion formats).
- The GTD tool consists of a complete radio-frequency prediction tool for large structure. It is used to propagate the electromagnetism field from the antenna sources to different points of interests such as:
  - other antennas: to compute the decoupling between them
  - targets: to evaluate the incoming field and decoupling at a specific location

- The rays may undergo single or multiple interactions (reflection, diffraction) before they finally reach their final destination. In this version of the software a maximum of 2 interactions can be processed.
- The can be displayed in several ways:
  - Mapping of field on a surface
  - Ray-path with filtering options
  - Decoupling between antennae

Besides a dedicated module called InCa is available to compute the field inside cavities. The goal is to assess the E-field inside the spacecraft cavity due to external antenna radiation and internal RF unit leakages. The method of computation is based on the Oversized Cavity Theory.