

This file contains the corrections to the thesis text.

The written materials in red are modified expressions.

Page 11, Line 5:

Table 3.1: symbol and definition of the parameters for different gravity and magnetic functionals.

Page 12, Equation (3):

$$T(r, \varphi, \lambda) = \frac{GM}{r} \sum_{n=0}^{n_{max}} \left(\frac{R}{r}\right)^n \sum_{m=0}^n (\Delta\bar{C}_{n,m} \cos m\lambda + \Delta\bar{S}_{n,m} \sin m\lambda) \bar{P}_{n,m}(\sin \varphi)$$

Page 12, Equation (4):

$$\delta g_{sa}(r, \varphi, \lambda) = -\frac{\partial T(r, \varphi, \lambda)}{\partial r} = \frac{GM}{r^2} \sum_{n=0}^{n_{max}} \left(\frac{R}{r}\right)^n (n+1) \sum_{m=0}^n (\Delta\bar{C}_{n,m} \cos m\lambda + \Delta\bar{S}_{n,m} \sin m\lambda) \bar{P}_{n,m}(\sin \varphi)$$

Equation (38):

$$0 \leq I = -\frac{(I_2/2)^2}{(I_1/3)^3} \leq 1$$

Page 19, line 3:

I_1 and I_2 are two high-frequency amplifying filters boosting the signals from sources...

Page 19, line 5:

Compared with $T_{zz} = \frac{Gm}{r^2}$, the strength of the parameters in amplifying the high frequency signals are $I_2 > I_1 > \Gamma_{zz}$.

Page 19, line 11:

These high-frequency amplifying parameters should be treated with caution because they are more susceptible to noise as the power of “ r ” rises.

Page 20, line 8:

Note that θ_s could be computed within a multiple of $\frac{\pi}{2}$, i.e., **equation (41)** gives an extreme value.

Page 20, line 13:

Consequently, **equation (41)** should be modified with respect to the adopted reference frame.

Page 21, line 3:

From **equations (43-47)**:

Page 21, equation (48):

$$\Gamma_{XYZ} = \Pi \Gamma_{enz} \Pi^T$$

Page 82, lines 15-19

- Detection of buried impact craters on rocky planets **using Γ_{zz} and I_2**
- Examination of the activity stages of volcanic features **employing I_2 -Topography analysis**
- Examination of the existence of megaplumes on the northern hemisphere of Mars compared with its southern hemisphere **using Γ_{zz} and I_2**
- Investigation of deformational level and existence of structural weakness on Mars **by SA and CF.**
- **Improving the Euler Deconvolution method using automated Structural Index through $f(I)$ function.**

Page 73, line 5:

At each case, we calculated the Normalized Root Mean Square Error (NRMSE) of the estimated location (**Tables 7.1 and 7.2**).

Page 74, line 1:

Table 7.1 presents an overview of various isolated models and their associated parameters, specifically focusing on the estimation of a COM and COTS, denoted as " r^{\wedge}_o ". It investigates how the accuracy of these estimations varies under different noise conditions. The dimensions and distances in **Table 7.1** are in meter.