ÉTUDE DES INÉGALITÉS DE LA LUNE

QUI DÉPENDENT DE L'INCLINAISON

Par P. CAUBET

Aide-astronome à l'Observatoire de Toulouse.

Le mouvement de la Lune présente des difficultés qui peuvent tenir ou bien à des causes encore inconnues ou bien aux procédés de calcul. Les erreurs de calcul sont toujours à craindre : même déterminée par deux procédés absolument indépendants, une expression peut être fautive par suite d'erreurs qui se compensent. C'est sans doute ce qui a amené M. H. Andoyer à contrôler par une nouvelle méthode [1] les résultats de Delaunay. J'ai cru utile de poursuivre l'application de sa méthode sous la dernière forme qu'il lui a donnée [2]. J'ai déjà exposé en détail les procédés de calcul adoptés et donné des résultats numériques [3]. Le lecteur peut trouver dans ces diverses publications toutes les indications théoriques et tous les résultats nécessaires pour le calcul. Je me borne donc à publier les nouveaux résultats :

$$M_{93} = \gamma_1^3 \, \varepsilon_1'.$$

$$\zeta_{93,0} = \frac{9}{2^4} m^2 - \frac{807}{2^8} m^3,$$

$$s_{93,0} = \frac{3}{2^4} m + \frac{333}{2^7} m^2 - \frac{4.919}{2^8} m^3,$$

[1] H. Andoyer. *Sur quelques inégalités de la longitude de la Lune*, Annales de la Faculté des Sciences de Toulouse, 1re série, t. VI (1892), pp. J1-J33. — *Théorie de la Lune*, collection *Scientia*, Paris, 1902. — *Sur la Théorie de la Lune*, Bulletin astronomique, t. XVIII (1901), pp. 177-208, t. XIX (1902), pp. 401-412, t. XXIV (1907), pp. 395-412.

[2] H. Andoyer, *Sur la Théorie de la Lune* (troisième article), Bulletin astronomique, t. XXIV (1907), pp. 395-412.

[3] P. Caubet, *Étude des inégalités de la Lune qui dépendent de l'inclinaison* (thèse de doctorat), Annales de la Faculté des Sciences de Toulouse, 3e série, t. I (1909), pp. 381-471; Annales de l'Observatoire de Toulouse, 2e série, t. VI (1910), pp. 391-481. — *Étude des inégalités de la Lune qui dépendent de l'inclinaison* (suite), Bulletin astronomique, t. XXX (1913), pp. 315-322.

$$\zeta_{93,2} = 0 \cdot m^3,$$

$$s_{93,2} = \frac{11}{2^6} m^2 + \frac{1.325}{2^8 \cdot 3} m^3,$$

$$\zeta_{93,-2} = -\frac{21}{2^3} m + \frac{347}{2^6} m^2 - \frac{1.517}{2^9} m^3,$$

$$s_{93,-2} = -\frac{35}{2^4} m + \frac{259}{2^7} m^2 + \frac{1.875}{2^9} m^3,$$

$$\zeta_{93,-4} = -\frac{21}{2^4} m^2 - \frac{349}{2^7} m^3,$$

$$s_{93,-4} = -\frac{105}{2^6} m^2 + \frac{255}{2^{10}} m^3,$$

$$\zeta_{93,-6} = 0 \cdot m^3,$$

$$s_{93,-6} = \frac{63}{2^{10}} m^3.$$

$$M_{94} = \gamma_{14}^3 \varepsilon_2'.$$

$$\zeta_{94,0} = \frac{9}{2^4} m^2 - \frac{51}{2^8} m^3,$$

$$s_{94,0} = -\frac{3}{2^4} m + \frac{255}{2^7} m^2 + \frac{119}{2^4} m^3,$$

$$\zeta_{94,2} = 0 \cdot m^3,$$

$$s_{94,2} = -\frac{77}{2^6} m^2 - \frac{2.015}{2^8} m^3,$$

$$\zeta_{94,-2} = \frac{9}{2^3} m + \frac{189}{2^6} m^2 - \frac{447}{2^9} m^3,$$

$$s_{94,-2} = \frac{15}{2^4} m + \frac{377}{2^7} m^2 + \frac{3.587}{2^9 \cdot 3} m^{3*},$$

$$\zeta_{94,-4} = \frac{9}{2^4} m^2 + \frac{175}{2^6} m^3,$$

$$s_{94,-4} = \frac{45}{2^6} m^2 + \frac{2.413}{2^{10}} m^3,$$

$$\zeta_{94,-6} = 0 \cdot m^3,$$

$$s_{94,-6} = -\frac{27}{2^{10}} m^3.$$

$$\mathbf{M}_{95} = \gamma_{11}^2 \gamma_{12} \varepsilon_4'.$$

$$\zeta_{95,0} = \frac{75}{2^4} m - \frac{423}{2^7} m^2 - \frac{40.697}{2^9} m^3.$$

$$s_{95,0} = \frac{9}{2} m - \frac{3}{2^2} m^2 - \frac{17.517}{2^8} m^3,$$

$$\zeta_{95,2} = \frac{15}{2^6} m^2 + \frac{1.463}{2^8} m^3,$$

$$s_{95,2} = \frac{3}{2^4} m + \frac{199}{2^7} m^2 + \frac{941}{2^4.3} m^3,$$

$$\zeta_{95,-2} = -\frac{7}{2^4} m + \frac{1.661}{2^7} m^2 + \frac{78.385}{2^9.3} m^3,$$

$$s_{95,-2} = -\frac{21}{2^4} m + \frac{1.417}{2^7} m^2 + \frac{17.667}{2^{10}} m^3,$$

$$\zeta_{95,4} = 0 . m^3,$$

$$s_{95,4} = \frac{297}{2^9} m^3,$$

$$\zeta_{95,-4} = -\frac{525}{2^9} m^3,$$

$$s_{95,-4} = \frac{21}{2^6} m^2 - \frac{4.673}{2^{10}} m^3.$$

$$\mathbf{M}_{96} = \gamma_{11}^2 \gamma_{12} \varepsilon_2'.$$

$$\zeta_{96,0} = -\frac{75}{2^4} m + \frac{435}{2^7} m^2 + \frac{37.911}{2^9} m^3,$$

$$s_{96,0} = -\frac{9}{2} m + \frac{105}{2^4} m^2 + \frac{15.779}{2^8} m^3,$$

$$\zeta_{96,2} = -\frac{105}{2^6} m^2 - \frac{3.795}{2^8} m^3,$$

$$s_{96,2} = -\frac{7}{2^4} m - \frac{735}{2^7} m^2 - \frac{2.335}{2^6} m^3,$$

$$\zeta_{96,-2} = \frac{3}{2^4} m - \frac{529}{2^7} m^2 - \frac{10.165}{2^9.3} m^3,$$

$$s_{96,-2} = \frac{9}{2^4} m - \frac{337}{2^7} m^2 - \frac{5.045}{2^{10}.3} m^{3*},$$

$$\zeta_{96,4} = 0 . m^3,$$

$$s_{96,4} = -\frac{1.155}{2^9} m^3,$$

$$\zeta_{96,-4} = \frac{135}{2^9} m^3,$$

$$s_{96,-4} = -\frac{9}{2^6} m^2 + \frac{765}{2^{10}} m^3.$$

$$M_{97} = \gamma_1 \gamma_2^2 \varepsilon_1', \qquad M_{98} = \gamma_1 \gamma_2^2 \varepsilon_2', \qquad M_{99} = \gamma_2^3 \varepsilon_1', \qquad M_{100} = \gamma_2^3 \varepsilon_2'.$$

$$M_{101} = \gamma_1^3 \varepsilon_1^2.$$

$$\zeta_{101,0} = \frac{75}{2^6} m^2,$$

$$s_{101,0} = -\frac{17}{2^4} + \frac{229}{2^3} m^2,$$

$$\zeta_{101,2} = 0 . m^2,$$

$$s_{101,2} = -\frac{1.159}{2^8} m^2,$$

$$\zeta_{101,-2} = -\frac{153}{2^6} m + \frac{465}{2^8} m^2,$$

$$s_{101,-2} = -\frac{501}{2^7} m + \frac{7.689}{2^9} m^2,$$

$$\zeta_{101,-4} = \frac{297}{2^7} m^2,$$

$$s_{101,-4} = \frac{1.719}{2^9} m^2.$$

$$M_{102} = \gamma_1^3 \varepsilon_1 \varepsilon_2.$$

$$\zeta_{102,0} = -\frac{15}{2^3} + \frac{405}{2^6} m - \frac{749}{2^9} m^2,$$

$$s_{102,0} = -\frac{33}{2^3} + \frac{1.215}{2^6} m - \frac{4.765}{2^9} m^2,$$

$$\zeta_{102,2} = -\frac{375}{2^7} m^2,$$

$$s_{102,2} = -\frac{255}{2^6} m - \frac{7.307}{2^8} m^2,$$

$$\zeta_{102,-2} = \frac{441}{2^6} m - \frac{2.189}{2^9} m^2,$$

$$s_{102,-2} = \frac{327}{2^5} m + \frac{339}{2^9} m^2,$$

$$\zeta_{102,-4} = \frac{963}{2^9} m^2,$$

$$s_{102,-4} = \frac{9}{2^2} m^2.$$

$$\mathrm{M}_{103} = \gamma_1^3 \varepsilon_2^2.$$

$$\zeta_{103,0} = -\frac{5}{2^4} + \frac{675}{2^6} m - \frac{16.445}{2^{10}.3} m^2 - \frac{323.521}{2^{12}} m^3,$$

$$s_{103,0} = \frac{13}{2^1} + \frac{675}{2^7} m - \frac{2.219}{2^9} m^{2*} - \frac{419.027}{2^{13}} m^{3**},$$

$$\zeta_{103,2} = -\frac{225}{2^6} m - \frac{2.625}{2^9} m^2 + \frac{22.375}{2^{12}} m^3,$$

$$s_{103,2} = -\frac{1.095}{2^7} m + \frac{6.213}{2^{10}} m^2 + \frac{260.499}{2^{13}} m^{3**},$$

$$\zeta_{103,-2} = \frac{81}{2^7} m + \frac{243}{2^7} m^2 - \frac{155}{2^5} m^3,$$

$$s_{103,-2} = \frac{39}{2^5} m + \frac{31}{2^6} m^2 - \frac{89.057}{2^{11}.3} m^{3**},$$

$$\zeta_{103,4} = 0.m^2,$$

$$s_{103,4} = -\frac{3.825}{2^{10}} m^2,$$

$$\zeta_{103,-4} = \frac{243}{2^9} m^2,$$

$$s_{103,-4} = \frac{711}{2^9} m^2.$$

$$\mathrm{M}_{104} = \gamma_1^2 \gamma_2 \varepsilon_1^2.$$

$$\zeta_{104,0} = -\frac{3}{2^1} - \frac{2.321}{2^9} m^2,$$

$$s_{104,0} = -\frac{5}{2^4} + \frac{135}{2^7} m + \frac{217}{2^{10}} m^{2*},$$

$$\zeta_{104,2} = -\frac{375}{2^8} m^2,$$

$$s_{104,2} = -\frac{153}{2^7} m - \frac{4.091}{2^9} m^2,$$

$$\zeta_{104,-2} = \frac{141}{2^7} m + \frac{1.279}{2^5} m^2,$$

$$s_{104,-2} = \frac{15}{2^3} m + \frac{48.295}{2^{10}} m^2,$$

$$\zeta_{104,-4} = \frac{855}{2^{10}} m^2,$$

$$s_{104,-4} = \frac{657}{2^9} m^2.$$

$$M_{105} = \gamma_1^2 \gamma_2 \varepsilon_1 \varepsilon_2.$$

$$\zeta_{405,0} = \frac{3}{2} - \frac{135}{2^5} m - \frac{1.575}{2^7} m^2,$$

$$h_{52} = -\frac{51}{2^3} m^2 + \frac{567}{2^4} m^3,$$

$$\zeta_{105,2} = -\frac{135}{5^5} m - \frac{11.025}{2^9} m^2,$$

$$s_{405,2} = -\frac{591}{2^6} m - \frac{22.397}{2^9} m^2,$$

$$\zeta_{405,-2} = \frac{63}{2^5} m - \frac{3.225}{2^9} m^2,$$

$$s_{405,-2} = -\frac{57}{2^6} m + \frac{1.097}{2^9} m^2,$$

$$\zeta_{405,4} = o . m^2.$$

$$s_{105,4} = -\frac{2.295}{2^9} m^2,$$

$$\zeta_{405,-4} = \frac{675}{2^8} m^2,$$

$$s_{405,-4} = \frac{765}{2^7} m^2.$$

$$M_{106} = \gamma_1^2 \gamma_2 \varepsilon_2^2.$$

$$\zeta_{106,0} = -\frac{51}{2^4} + \frac{3.375}{2^7} m - \frac{16.391}{2^9} m^2 - \frac{1.292.259}{2^{13}} m^3,$$

$$s_{106,0} = -5 + \frac{4.185}{2^7} m - \frac{13.743^*}{2^9} m^2 - \frac{1.468.701}{2^{13}} m^{3**} \ (^1),$$

$$\zeta_{106,2} = \frac{15}{2^6} m - \frac{14.195}{2^{10}} m^2 - \frac{1.848.227}{2^{13}.3} m^3,$$

$$s_{106,2} = \frac{117}{2^7} m - \frac{8.229}{2^{10}} m^2 - \frac{75.899}{2^{12}} m^{3**},$$

$$\zeta_{106,-2} = \frac{189}{2^7} m + \frac{9}{2^7} m^2 - \frac{22.473}{2^{13}} m^3,$$

$$s_{106,-2} = \frac{543}{2^7} m - \frac{4.459^*}{2^9} m^2 - \frac{134.785}{1^{12}.3} m^{3**},$$

$$\zeta_{106,4} = -\frac{7.425}{2^{10}} m^2,$$

$$s_{106,4} = -\frac{2.295}{2^7} m^2,$$

$$\zeta_{106,-4} = 0. m^2,$$

$$s_{106,-4} = \frac{459}{2^{10}} m^2.$$

$$M_{107} = \gamma_1 \gamma_2^2 \varepsilon_1^2, \quad M_{108} = \gamma_1 \gamma_2^2 \varepsilon_1 \varepsilon_2, \quad M_{109} = \gamma_1 \gamma_2^2 \varepsilon_2^2, \quad M_{110} = \gamma_2^3 \varepsilon_1^2,$$
$$M_{111} = \gamma_2^3 \varepsilon_1 \varepsilon_2, \quad M_{112} = \gamma_2^3 \varepsilon_2^2.$$

(^{1}) Le calcul de ce coefficient a nécessité les compléments suivants à mes résultats antérieurs :

$$(M_{21} = \gamma_1 \varepsilon_1^2)$$

$$\text{à } \zeta_{21,0} \quad -\frac{5.435.017}{2^{15}.5} m^5; \qquad \text{à } s_{21,0} \quad -\frac{50.748.899}{2^{15}.5} m^5;$$

$$(M_{51} = \gamma_1 \gamma_2 \varepsilon_1^2)$$

$$\text{à } \xi_{51,0} \quad \frac{132.965}{2^{14}.3} m^4 + \frac{30.127.099}{2^{15}.5} m^5; \qquad \text{à } \mu_{51,0} \quad -\frac{416.127}{2^{12}} m^4 - \frac{34.958.317}{2^{14}.3} m^5;$$

$$\text{à } \eta_{51,0} \quad -\frac{5.476.025}{2^{14}.3} m^4 - \frac{164.582.005}{2^{16}.3} m^5; \qquad \text{à } \lambda_{51,0} \quad \frac{174.301}{2^{10}} m^4 + \frac{715.338.467}{2^{17}.5} m^5.$$

$$\mathrm{M}_{113} = \gamma_1^3\, \alpha \quad (\beta \text{ facteur commun}).$$

$$\zeta_{113,1} = \frac{15}{2^7}\, m^2,$$

$$s_{113,1} = \frac{15}{2^5}\, m + \frac{211}{2^6}\, m^2,$$

$$\zeta_{113,-1} = \frac{45}{2^4}\, m - \frac{1.315}{2^8}\, m^2,$$

$$s_{113,-1} = \frac{165}{2^5}\, m - \frac{2.299}{2^8}\, m^2,$$

$$\zeta_{113,3} = \mathrm{o}.\, m^2,$$

$$s_{113,3} = -\frac{15}{2^7}\, m^2,$$

$$\zeta_{113,-3} = \frac{75}{2^5}\, m - \frac{555}{2^8}\, m^2,$$

$$s_{113,-3} = \frac{25}{2^4}\, m - \frac{375}{2^8}\, m^2,$$

$$\zeta_{113,-5} = \frac{75}{2^8}\, m^2,$$

$$s_{113,-5} = \frac{75}{2^7}\, m^2.$$

$$\mathrm{M}_{114} = \gamma_1^2\, \gamma_2\, \alpha \quad (\beta \text{ facteur commun}).$$

$$\zeta_{114,1} = \frac{345}{2^6}\, m + \frac{4.925}{2^7}\, m^2,$$

$$s_{114,1} = \frac{165}{2^4}\, m + \frac{17.045}{2^8}\, m^2,$$

$$\zeta_{114,-1} = -\frac{495}{2^6}\, m - \frac{46.995}{2^9}\, m^2,$$

$$s_{114,-1} = -\frac{75}{2^4}\, m - \frac{15.187}{2^5}\, m^2,$$

$$\zeta_{114,3} = -\frac{35}{2^8}\, m^2,$$

$$s_{114,3} = \frac{35}{2^4}\, m^2,$$

$$\zeta_{114,-3} = \frac{25}{2^5} m - \frac{335}{2^9} m^2,$$

$$s_{114,-3} = \frac{25}{2^4} m - \frac{915}{2^8} m^2.$$

$$M_{115} = \gamma_1 \gamma_2^2 x, \qquad M_{116} = \gamma_2^3 x.$$

$$M_{117} = \gamma_1^3 x \varepsilon_1 \quad (\beta \text{ facteur commun}).$$

$$\zeta_{117,1} = 0 . m,$$

$$s_{117,1} = \frac{255}{2^7} m,$$

$$\zeta_{117,-1} = \frac{135}{2^5} m,$$

$$s_{117,-1} = \frac{1.455}{2^7} m,$$

$$\zeta_{117,-3} = \frac{225}{2^6} m,$$

$$s_{117,-3} = \frac{125}{2^5} m.$$

$$M_{118} = \gamma_1^3 x \varepsilon_2 \quad (\beta \text{ facteur commun}).$$

$$\zeta_{118,1} = \frac{225}{2^7} m,$$

$$s_{118,1} = \frac{255}{2^6} m,$$

$$\zeta_{118,-1} = \frac{945}{2^7} m,$$

$$s_{118,-1} = \frac{45}{2^4} m,$$

$$\zeta_{118,-3} = -\frac{25}{2^5} m,$$

$$s_{118,-3} = 0 . m.$$

$$M_{119} = \gamma_1^2 \gamma_2 \alpha \varepsilon_1 \quad (\beta \text{ facteur commun}).$$

$$\zeta_{119,1} = \frac{1.035}{2^7} m,$$

$$s_{119,1} = \frac{1.575}{2^6} m,$$

$$\zeta_{119,-1} = -\frac{1.965}{2^7} m,$$

$$s_{119,-1} = -\frac{285}{2^4} m,$$

$$\zeta_{119,-3} = s_{118,-3} = 0.m.$$

———

$$M_{120} = \gamma_1^2 \gamma_2 \alpha \varepsilon_2 \quad (\beta \text{ facteur commun}).$$

$$\zeta_{120,1} = \frac{495}{2^5} m,$$

$$s_{120,1} = \frac{1.455}{2^7} m,$$

$$\zeta_{120,-1} = \frac{15}{2^5} m,$$

$$s_{120,-1} = \frac{255}{2^7} m.$$

$$\zeta_{120,3} = 0.m,$$

$$s_{120,3} = \frac{25}{2^6} m,$$

$$\zeta_{120,-3} = \frac{75}{2^6} m,$$

$$s_{120,-3} = \frac{225}{2^6} m.$$

———

$$M_{121} = \gamma_1 \gamma_2^2 \alpha \varepsilon_1, \quad M_{122} = \gamma_1 \gamma_2^2 \alpha \varepsilon_2, \quad M_{123} = \gamma_2^3 \alpha \varepsilon_1, \quad M_{124} = \gamma_2^3 \alpha \varepsilon_2.$$

———

Discordances avec Delaunay.

A	M	D	E	C
$2D - 3F + l'$	$\gamma_1^3 \varepsilon_2' m^3$	$0,0013$	$0,0006$	$-0,0007$
$2D - F + l'$	$\gamma_1^2 \gamma_2 \varepsilon_2' m^3$	$0,0011$	$0,0004$	$-0,0007$
$3F - 2l$	$\gamma_1^3 \varepsilon_2^2 m^2$	$0,0028$	$0,0027$	$-0,0001$
$F + 2l$	$\gamma_1^2 \gamma_2 \varepsilon_1^2 m^2$	$0,0008$	$-0,0001$	$-0,0009$
$F - 2l$	$\gamma_1^2 \gamma_2 \varepsilon_2^2 m^2$	$0,0171$	$0,0169$	$-0,0002$
$2D - F + 2l$	$\gamma_1^2 \gamma_2 \varepsilon_2^2 m_2$	$0,0043$	$0,0054$	$+0,0011$

$$M_{125} = \gamma_1^4.$$

$$\xi_{125,0} = 0.m^3,$$

$$\tau_{125,0} = \frac{3}{2^3} m^2 - \frac{45}{2^6} m^3,$$

$$\mu_{125,0} = 0.m^3,$$

$$\lambda_{125,0} = \frac{1}{2^2} - \frac{11}{2^3} m^2 + \frac{363}{2^7} m^3,$$

$$\xi_{125,2} = \tau_{125,2} = \mu_{125,2} = 0.m^3,$$

$$\lambda_{125,2} = \frac{11}{2^4} m^2 + \frac{59}{2^3.3} m^3,$$

$$\xi_{125,-2} = \frac{3}{2^4} m^2 - \frac{73}{2^5} m^3,$$

$$\tau_{125,-2} = -\frac{3}{2^2} m + \frac{13}{2^5} m^2 + \frac{5.495}{2^8.3} m^3,$$

$$\mu_{125,-2} = -\frac{1}{2} m^2 + \frac{23}{2.3} m^3,$$

$$\lambda_{125,-2} = \frac{3}{2^2} m - \frac{9}{2^3} m^2 - \frac{11.899}{2^9.3} m^3,$$

$$\xi_{125,-4} = \frac{63}{2^6} m^2 - \frac{915}{2^8} m^3 \,(^1),$$

$$\tau_{125,-4} = \frac{9}{2^5} m^2 - \frac{507}{2^8} m^3,$$

$(^1)\ \xi_{125,-4} + \tau_{125,-4} = \ldots + \frac{8.091}{2^{11}} m^4.$

$$\mu_{125,-4} = -\frac{65}{2^6} m^4,$$

$$\lambda_{125,-4} = -\frac{9}{2^7} m^2 + \frac{285}{2^8} m^3,$$

$$\xi_{125,-6} = \frac{27}{2^8} m^3,$$

$$\tau_{125,-6} = \mu_{125,-6} = 0.m^3,$$

$$\lambda_{125,-6} = \frac{81}{2^9} m^3.$$

$$M_{126} = \gamma_1^3 \gamma_2.$$

$$\xi_{126,0} = -\frac{3}{2^2} m^2 + \frac{207}{2^6} m^3 + \frac{4.195}{2^9} m^4 - \frac{18.481}{2^{12}} m^5,$$

$$\tau_{126,0} = \frac{137}{2^6} m^2 - \frac{213}{2^7} m^3 - \frac{42.913}{2^{10}.3} m^4 + \frac{109}{2^3.3} m^5,$$

$$\mu_{126,0} = m^2 - \frac{9}{2} m^3 - \frac{179}{2^5} m^4 + \frac{3.361}{2^8} m^5,$$

$$\lambda_{126,0} = -\frac{1}{2} + \frac{9}{2^6} m^2 + \frac{441}{2^7} m^3 + \frac{7.721^{**}}{2^{12}} m^4 - \frac{116.839}{2^{10}.3} m^{5**},$$

$$\xi_{126,2} = 0.m^3,$$

$$\tau_{126,2} = -\frac{3}{2^3} m^2 - \frac{19}{2^4} m^3,$$

$$\mu_{126,2} = 0.m^3,$$

$$\lambda_{126,2} = \frac{3}{2^3} m + \frac{25}{2^5} m^2 - \frac{211}{2^3.3} m^3,$$

$$\xi_{126,-2} = \frac{9}{2^2} m - 9m^2 + \frac{675}{2^8} m^3 - \frac{57.237}{2^{11}} m^4 \, (^1),$$

$(^1)\ \xi_{126,-2} + \tau_{126,-2} = \ldots + \dfrac{28.697.249}{2^{13}.3^3} m^5.$

Compléments nécessaires aux résultats antérieurs.

$$(M_{34} = \gamma_1 \gamma_2)$$

à $\xi_{34,2}$ $-\dfrac{19.308.511}{2^{15}.3^2.5} m^6;$ à $\mu_{34,2}$ $-\dfrac{1.912.219}{2^{11}.3^4} m^6;$

à $\tau_{34,2}$ $+\dfrac{4.700.851}{2^{14}.3^3} m^6;$ à $\lambda_{34,2}$ $+\dfrac{498.243.529}{2^{16}.3^4.5} m^{6**}.$

$$\tau_{126,-2} = -\frac{3}{2}m + \frac{95}{2^4}m^2 + \frac{3.011}{2^7.3}m^3 + \frac{1.214.701}{2^{14}.3^2}m^4,$$

$$\mu_{126,-2} = -\frac{3}{2}m^2 + \frac{27}{2^3}m^3 + \frac{1.563}{2^7}m^4 + \frac{27.631}{2^9}m^5,$$

$$\lambda_{126,-2} = \frac{3}{2^2}m - \frac{157}{2^5}m^2 - \frac{2.165}{2^9.3}m^{3*} - \frac{344.981}{2^{10}.3^2}m^{4**},$$

$$\xi_{126,4} = \tau_{126,4} = \mu_{126,4} = 0.m^3.$$

$$\lambda_{126,4} = \frac{33}{2^5}m^3,$$

$$\xi_{126,-4} = \frac{9}{2^5}m^2 + \frac{45}{2^6}m^3.$$

$$\tau_{126,-4} = -\frac{27}{2^4}m^3,$$

$$\mu_{126,-4} = \frac{9}{2^2}m^3,$$

$$\lambda_{126,-4} = \frac{99}{2^7}m^2 + \frac{15}{2^3}m^3,$$

$$\xi_{126,-6} = \tau_{126,-6} = \mu_{126,-6} = 0.m^3,$$

$$\lambda_{126,-6} = -\frac{27}{2^9}m^3.$$

_____

$$\mathbf{M}_{127} = \gamma_1^2\gamma_2^2.$$

$$\xi_{127,0} = \tau_{127,0} = -\frac{5}{2^4}m^2 + \frac{645}{2^7}m^3,$$

$$\mu_{127,0} = m^2 - \frac{9}{2^2}m^3,$$

$$\xi_{127,2} = \frac{9}{2^4}m^2 + \frac{21}{2^3}m^3,$$

$$\tau_{127,2} = -\frac{87}{2^5}m^2 - \frac{1.445}{2^8}m^3,$$

_____

$$(\mathbf{M}_{s1} = \gamma_1^3)$$

$$\text{à } \xi_{s1,-2} + \frac{109.735}{2^{12}}m^5; \qquad \text{à } s_{s1,-2} + \frac{39.329.209}{2^{15}.3^3}m^{5**}.$$

$$(\mathbf{M}_{s2} = \gamma_1^2\gamma_2)$$

$$\text{à } \xi_{s2,-2} + \frac{49.917.997}{2^{15}.3^3}m^5; \quad \text{à } s_{s2,-2} + \frac{68.035.715}{2^{16}.3^3}m^{5**}.$$

$$\mu_{127,2} = -\frac{1}{2}m^2 - \frac{19}{2^2.3}m^3,$$

$$\lambda_{127,2} = -\frac{9}{2^3}m + \frac{61}{2^5}m^2 + \frac{2.849}{2^9.3}m^3,$$

$$\xi_{127,4} = \tau_{127,4} = \mu_{127,4} = 0.m^3,$$

$$\lambda_{127,4} = \frac{27}{2^7}m^2 - \frac{369}{2^8}m^3.$$

$$M_{128} = \gamma_1 \gamma_2^3, \qquad M_{129} = \gamma_2^4.$$

Discordances avec Delaunay.

A	M	D	E	C
$_2D - _2F$	$\gamma_1^3 \gamma^2 m^3$	$0,0020''$	$-0,0010''$	$-0,0030''$