FONCTIONS ET INTÉGRALES ELLIPTIQUES

(ELLIPTIC FUNCTIONS AND INTEGRALS)

Ahmed Lesfari

Abstract. This paper presents the basic ideas and properties of elliptic functions and elliptic integrals as an expository essay. It explores some of their numerous consequences and includes applications to some problems such as the simple pendulum and the Euler rigid body motion.

Full text

References

[1] N.I. Akhiezer, *Elements of the Theory of Elliptic Functions*, AMS Translations of mathematical monographs, **79** (1990). MR1054205(91k:33016). Zbl 0694.33001.

[2] J.V. Armitage and W.F. Eberlein, *Elliptic Functions*, London Mathematical Society Student Texts vol. **67**, Cambridge University Press 2006. MR2266844. Zbl 1105.14001.

[3] N. Koblitz, *A course in Number Theory and Cryptography*, GTM, Vol. **114**, Springer-Verlag, 2^eed. 1994. MR1302169(95h:94023). Zbl 0819.11001.

[4] S. Lang, *Elliptic Functions*, Springer-Verlag, 2^eed. 1987. MR0890960(88c:11028). Zbl 0615.14018.

[5] M. Lavrentiev, B. Chabat, *Méthodes de la théorie des fonctions d'une variable complexe*, Editions Mir, 1977.

[6] D.F. Lawden, *Elliptic Functions and Applications*, Applied Mathematical Sciences, Vol. **80**, Springer-Verlag, 1989. MR1007595(90h:33001). Zbl 0689.33001.

[7] A. Lesfari, *Completely integrable systems : Jacobi's heritage*, J. Geom. Phys. **31** (1999), 265-286. MR1711527(2000f:37077). Zbl 0937.37046.

[8] A. Lesfari, *Le théorème d'Arnold-Liouville et ses conséquences*, *Elem. Math.* **58**, 1 (2003), 6-20. MR1961831(2004e:37091). Zbl 1112.37043.

[9] A. Lesfari, *Etude des solutions méromorphes d'équations différentielles*, Ren. Semin. Mat. Univ. Politec. Torino. Vol. **65**, 4 (2007).

[10] A. Lesfari, A. Elachab, *Etude géométrique d'une famille de systèmes intégrables*, Math. Pannon. **15**/2 (2004), 275-282. MR2098681(2005i:37067). Zbl 1133.37330.

[11] V. Prasolov and Y. Sobolovyev, *Elliptic Functions and Elliptic Integrals*, AMS Translations of mathematical monographs, **170** (1997). MR1469740(98k:14064). Zbl 0946.11001.

[12] C.L. Siegel, *Topics in complex function theory*, Volume I, Wiley-Interscience, 1969. MR0257326(41 #1977). Zbl 0635.30002.

[13] A. Weil, *Euler and the Jacobians of elliptic curves*, Progress in Math., Vol. **36**, 353-359, Birkhäuser, 1983. MR0717601(85d:14060). Zbl 0554.01014.

Département de Mathématiques,

Faculté des Sciences, Université Chouaïb Doukkali,

B.P. 20, El-Jadida, Maroc.

e-mail : lesfariahmed@yahoo.fr