the force function and h the energy constant, Maupertuis' principle shows that the paths of energy h can be thought of as geodesics on a surface of revolution whose squared line element is

$$ds^2 = 2(U(R) + h)\,(dR^2 + R^2 d\Phi^2). \tag{18}$$

Assuming that the path in the (x, y)-plane is bounded, neither asymptotic nor periodic, and such that the origin of the plane is not reached, the closure of the path will be a ring, $R_1 \leqq R \leqq R_2$, bordered by two concentric circles about the origin of the (x, y)-plane (rotating ellipse). This means that, in virtue of (18), one has to do with the case (i). In order to apply the explicit representation of the density obtained above, one merely has to replace in (18) the radius vector R by a Gaussian parameter $\varrho = \varrho(R)$ for which

$$d\varrho = \{2(U(R) + h)\}^{\frac{1}{2}}\, dR.$$

Hence, an elementary reduction shows that in the ring of the (x, y)-plane on which the path is everywhere dense the asymptotic density of the path is given by

$$2\,\{U(R) + h\}\,(\pi\omega)^{-1}\,\{2(U(R) + h)R^2 - c^2\}^{-\frac{1}{2}}, \tag{19}$$

where c is the constant of the angular momentum and the period ω of the function $R(t)$ is determined by

$$\omega = 4\int_{R_1}^{R_2} \{U(R) + h\}\,\{2(U(R) + h)R^2 - c^2\}^{-\frac{1}{2}}\, R dR.$$

It is understood that the asymptotic probability belonging to a portion of the ring in the (x, y)-plane is obtained by multiplying (19) by the euclidean area element $RdRd\Phi$, and then integrating over the portion of the ring under consideration.

* * *

O asymptotickém rozložení geodetických čar na rotační ploše.

(Obsah předešlého článku.)

Jde o studium geodetických čar na rotační ploše, které jsou hustě rozloženy v oboru Θ, při čemž Θ jest vymezen dvěma rovnoběžkami plochy anebo jest celá plocha. Rozložení takových geodetických čar v jednotlivých bodech oboru Θ vyjadřují autoři t. zv. asymptotickou hustotou, pro niž odvozují vzorce (16), (17).