A Note on the Kepler Problem in a Space of Constant Curvature.

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The expressions of Hamiltonian (2) must be

$$(2) \quad H = \frac{1}{2} \left(1 + \frac{1}{4} K r^2 \right)^2 \left(\sum_{i=1}^3 p_i^2 \right) + \left(1 - \frac{1}{4} K r^2 \right) \frac{\beta}{r}.$$

The expressions of the radial equation (22) must be

$$(22) \quad \frac{d^2}{dy^2} R(y) + \frac{2G'(y)}{G(y)} \frac{d}{dy} R(y) - 2R(y) (V(y) - E) = \frac{k(k+1)}{G^2(y)} R(y).$$

Equations (28) and (29) must be

$$(28) \quad Q_+ Q_- S_{k+1}(\chi) - \left\{ \frac{\beta^2}{-K(k+1)^2} + k(k+2) + \frac{2E}{-K} \right\} S_{k+1}(\chi) = 0,$$

$$(29) \quad Q_- Q_+ S_k(\chi) - \left\{ \frac{\beta^2}{-K(k+1)^2} + k(k+2) + \frac{2E}{-K} \right\} S_k(\chi) = 0.$$

And the introduced inner product (30) can be defined as

$$(30) \quad (S_k(\chi), S_m(\chi)) = (-1/K) \int_0^\infty S_k^*(\chi) S_m(\chi) (\sinh(\chi))^2 d\chi.$$

On the other hand, the inequality (32) should be derived from (28) and (29) as

$$(32) \quad \frac{\beta^2}{-K(k+1)^2} + k(k+2) + \frac{2E}{-K} \geq 0.$$