

On the imbedding of the Schwarzschild space-time III.

By

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In parts I and II of this series [4], we developed a systematic discussion of imbeddings of the Schwarzschild space-time into a pseudo-euclidean space of six dimensions. We have already obtained the stationary imbeddings of three types (i), (ii) and (iii) in the first paper, which will be called *elliptic*, *hyperbolic* and *parabolic* respectively in the present paper. In this paper, first of all, we shall discuss these imbeddings in detail and illustrate by figures. It should seem difficult to find explicit functions of imbedding except for the stationary cases, and the remainder of this paper will be devoted to considerations of various imbeddings of the Schwarzschild space-time.

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§ 1. The equation of (t, r) -geodesics.

The equations of a geodesic in the Schwarzschild space-time V^4 are given by

$$\frac{d^2 t}{du^2} + \frac{2m}{\gamma r^2} \frac{dt}{du} \frac{dr}{du} = 0,$$