

PHYSICS 161

Instructor: Dr. A. M. Wolfe (phone: 47435)

Text: General Relativity: J. Hartle

Homework no. 4

Due: Thurs. March 1

1

Consider the two-dimensional spacetime with line element

$$ds^2 = -X^2 dT^2 + dX^2$$

Find the solutions $X(T)$ (or $T(X)$) for all timelike geodesics in this spacetime. Plot your results, using your choice of suitable integration constants.

2,3,4

Hartle 9-6,9-8,9-9

5

Hartle 9-19. Hint: Use same procedures discussed in lecture to derive deflection angle for a Schwarzschild metric.