

general relativity, I shall discuss only those <sup>trade</sup> measurements that can be ~~measured~~ in the plane.

A flatworm living on a ~~flat~~ surface can construct geometric figures and know whether their properties differ from those of the same figures drawn in the plane.

He takes a short measuring rod and chooses three points in the surface. He measures, painstakingly, the lengths of all the curves between the three points, and chooses the shortest three, the geodesics, to be the sides of a triangle. He can then measure their interior angles and add them up to see if the sum is different from that for a triangle drawn in the plane.

$S > \pi$  surface is +vely curved like sphere

$S = \pi$  surface is flat like plane

$S < \pi$  surface -vely curved like horn

General relativity predicts something analogous. A geodesic in general relativity though is not a curve of minimum length but a curve of maximum lapse proper time, the time measured on a clock carried on a particle moving between the two events.

d) The general theory is completely general. For a distribution of matter the path of a test particle can be found thus: