

and contain matter whose pressure is greater than minus one-third the density. An event horizon exists when there are events that a given observer will never see. The steady-state model (Kottler-Rice) is an example of one with an event horizon. Horizons will be further discussed in Chapter 4 which also deals with the occurrence of singularities of spacetime and their connection with topology.

Each chapter is self-contained and has its own references. The following notation is used throughout; space-time is taken to be a Riemannian manifold with metric tensor g_{ij} ; This is taken to have signature -2 except in Chapter 2 where, in order to facilitate comparison with previous work, the signature is 2 . Covariant differentiation is indicated by a semi-colon. Units are employed in which, the speed of light, and K , the gravitational constant, equal one.

¹

¹Written by Peter MOUEZA