

Flamm metric

Spatial part of Schw. metric

$$\frac{dr^2}{1-\frac{2M}{r}} + r^2 (d\theta^2 + \sin^2\theta d\phi^2)$$

4 dim flat space w, x, y, z

$$ds^2 = dw^2 + dx^2 + dy^2 + dz^2$$

$$x = r \sin\theta \cos\phi$$

$$y = r \sin\theta \sin\phi$$

$$z = r \cos\theta$$

$$w = \sqrt{(r-2M)8M}$$

$$\text{or } r = \frac{w^2}{8M} + 2M$$

$$ds^2 = \frac{8M}{4(r-2M)} dr^2 + dr^2 + r^2 (d\theta^2 + \sin^2\theta d\phi^2)$$

$$= \left(\frac{r}{r-2M}\right) dr^2 + r^2 (d\theta^2 + \sin^2\theta d\phi^2)$$

