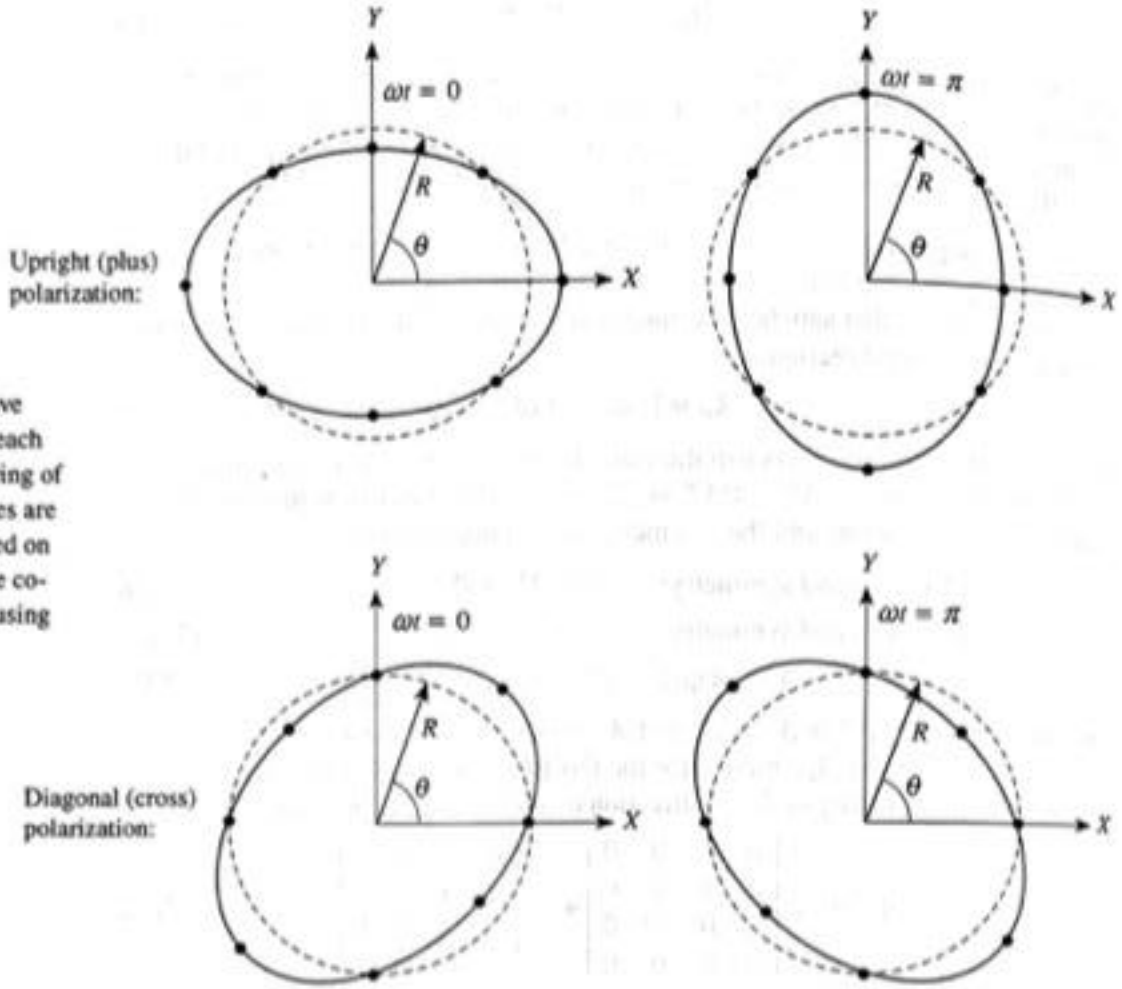

FIG. 31.1 How a gravitational wave moving in the $+z$ direction with each possible polarization deforms a ring of particles. The X and Y coordinates are actual cartesian coordinates based on distances from the origin, not the co-moving coordinates that we are using in our metric.

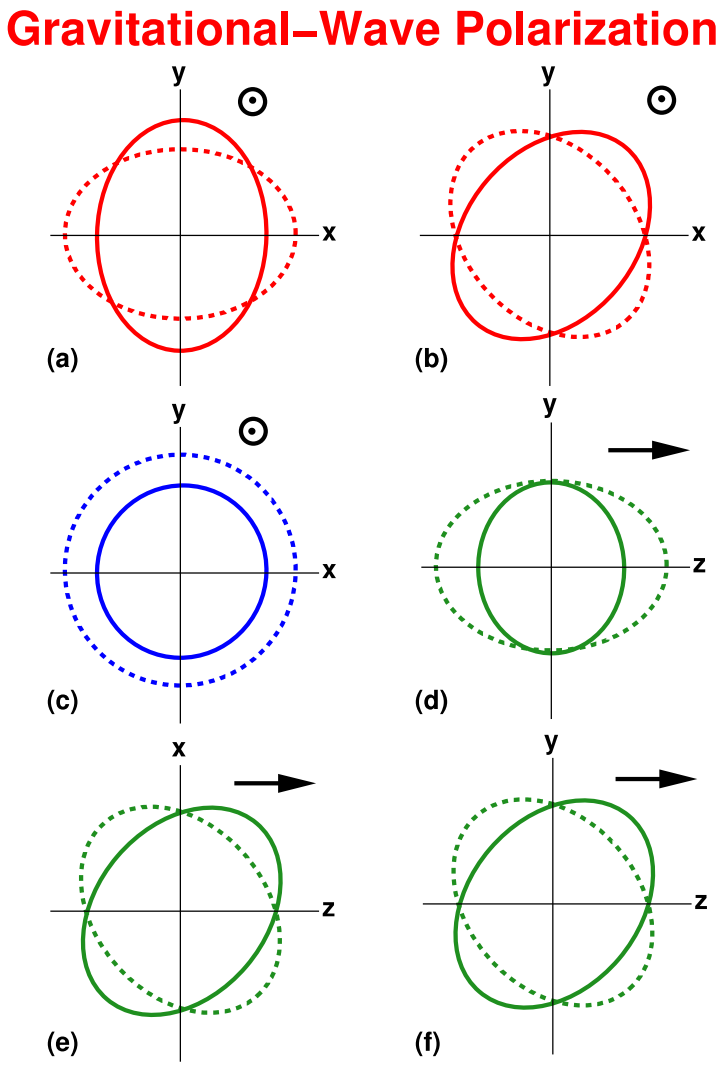

Figure 10: The six polarization modes for gravitational waves permitted in any metric theory of gravity. Shown is the displacement that each mode induces on a ring of test particles. The wave propagates in the $+z$ direction. There is no displacement out of the plane of the picture. In (a), (b), and (c), the wave propagates out of the plane; in (d), (e), and (f), the wave propagates in the plane. In GR, only (a) and (b) are present; in massless scalar–tensor gravity, (c) may also be present.