• The equations of motion derivable from the 3PN accurate conservative Hamiltonian, in ADM–type coordinates in the center–of–mass frame, allows 'Keplerian type' parametric solution:

• The associated 3PN accurate orbital energy & angular momentum **L** are conserved.

• The conservation of **L** => that the motion is restricted to a plane, namely the orbital plane.

Introduce polar coordinates such that

$$\mathbf{r} = r(\cos\varphi, \sin\varphi).$$