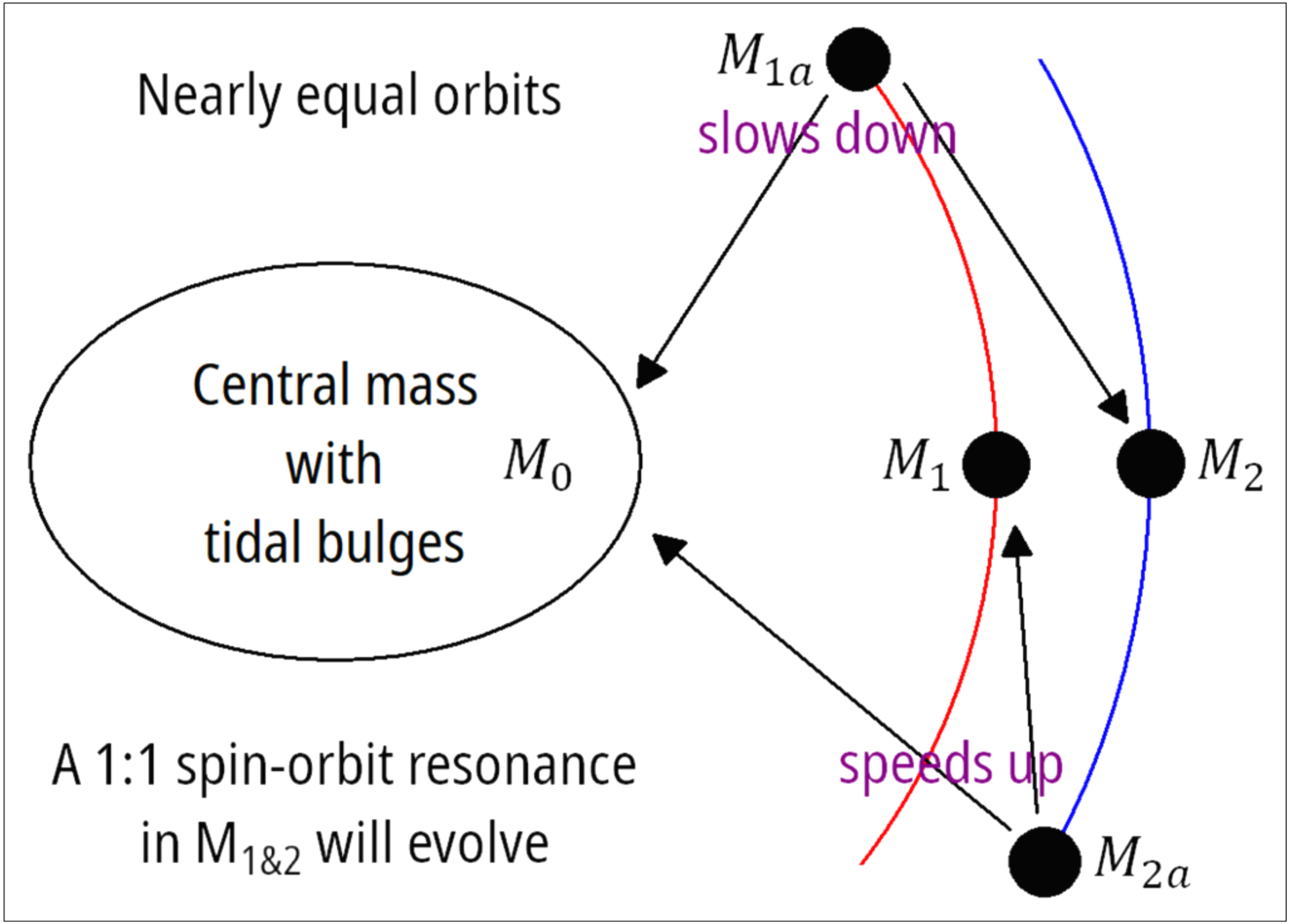
Nearly equal orbits
M_{1a}
slows down
Central mass
with
tidal bulges
M_0
M_1
M_2
A 1:1 spin-orbit resonance
in $M_{1\&2}$ will evolve
speeds up
M_{2a}

Kepler 3: $\omega_{1,\mathrm{K3}}^2 r_1^3 = \omega_{2,\mathrm{K3}}^2 r_2^3 = GM_0$

Spin-orbit resonance: $\omega_{\mathrm{avg}}^2 r_{\mathrm{avg}}^3 = GM_0$

but also: $\omega_{1,\mathrm{actual}} = \omega_{\mathrm{avg}} = \omega_{2,\mathrm{actual}}$

as well as: $r_1 < r_{\mathrm{avg}} < r_2$

Therefore: $\omega_{1,\mathrm{actual}} < \omega_{1,\mathrm{K3}}$

and: $\omega_{2,\mathrm{actual}} > \omega_{2,\mathrm{K3}}$

We find: $\Delta F_{\mathrm{cp}} = \omega_{2,\mathrm{actual}}^2 r_2 M_2 - \omega_{1,\mathrm{actual}}^2 r_1 M_1 > 0$

Roche limit: $\Delta F_{g,1,2} = F_{g,0,1} - F_{g,0,2}$

Tear apart: $\Delta F_{\mathrm{tot}} = \Delta F_{g,1,2} + \Delta F_{\mathrm{cp}} > \Delta F_{g,1,2}$

results in: M_2 orbits too fast, goes off rails & gets in higher orbit

as well as: M_1 orbits too slow, dives inwards & gets in lower orbit

and then: M_1 slows down more and more by M_0's tidal bulge pulling it, finally resulting in an impact (***IFF*** M_0 spins slower than ω_1).

Conclusion: **I**nnermost **N**ondestructive **C**ircular **O**rbit ≈ Roche limit.

***This* is why every accretion disk has a hole in it.**

ISCO? INCO!

In case of matter orbiting a black hole:
replace *tidal bulges* with *frame dragging*.
The latter is fully comparable
to a *gravitational slingshot*,
see http://henk-reints.nl/astro/HR-frame-dragging.pdf .

A slingshot of a spacecraft increases its tangential velocity.
The centrifugal force (urh, shortage of centripetal force)
then widens its (quasi) orbit around the Sun.

Similarly, the innermost matter of an accretion disk moves to
a wider orbit, be it through the tidal effect or frame dragging.

Precondition is that the axial rotation of the
central mass is faster than the other body's orbit.