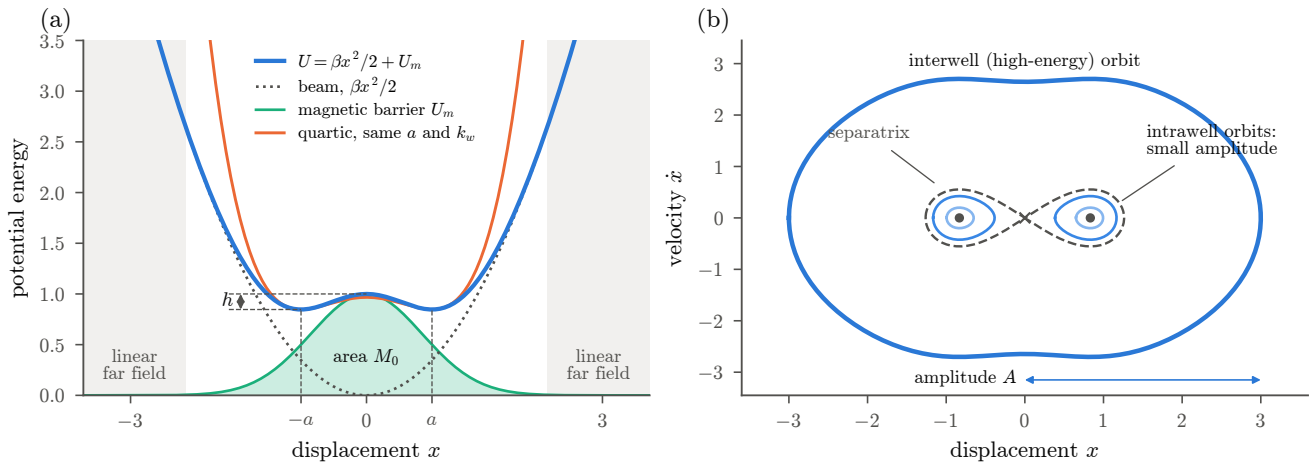

(a)
potential energy
displacement x
$U = \beta x^2/2 + U_m$
beam, $\beta x^2/2$
magnetic barrier U_m
quartic, same a and k_w
$\hbar$
area M_0
linear far field
linear far field
-3
$-a$
0
a
3
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
(b)
velocity $\dot{x}$
displacement x
interwell (high-energy) orbit
separatrix
intrawell orbits: small amplitude
amplitude A
-3
-2
-1
0
1
2
3