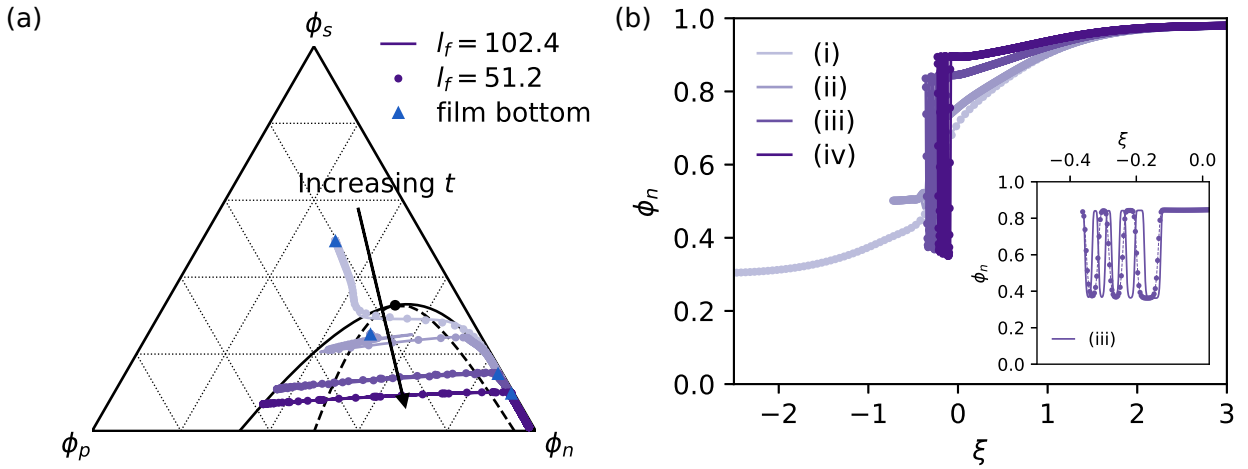
(a)
ϕ_s
$l_f = 102.4$
$l_f = 51.2$
film bottom
Increasing t
ϕ_p
ϕ_n
(b)
(i)
(ii)
(iii)
(iv)
ϕ_n
ξ
1.0
0.8
0.6
0.4
0.2
0.0
−2
−1
0
1
2
3
−0.4
−0.2
0.0
(iii)