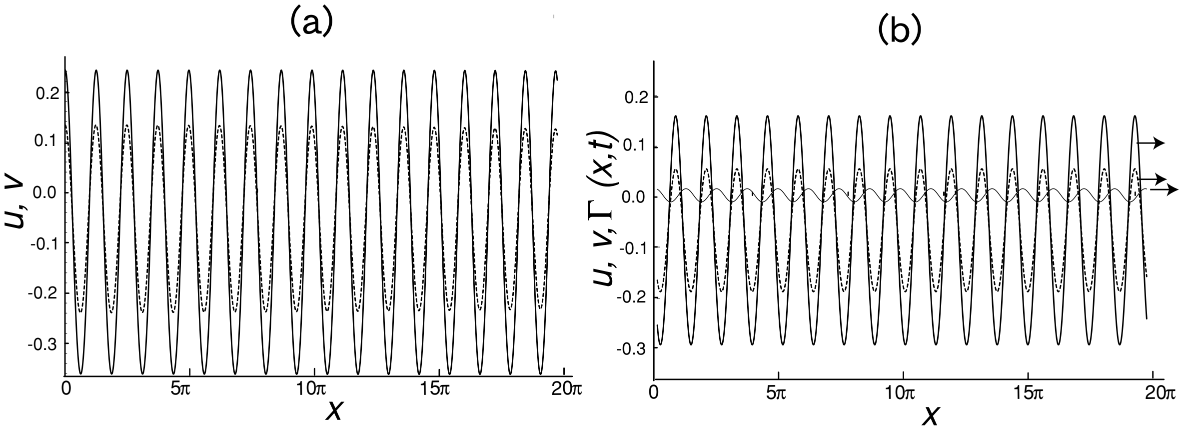

Fig. 2. Spatial variations of $u(x,t)$ (thick dotted line) and $v(x,t)$ (thick full line), which are (a) statical as obtained numerically from Eqs. (1) and (2) for $D_u = 0.15$, $D_v = 15.0$, $\alpha = 0.5$, $\beta = 0.04$, and $\gamma = 28.0$; and (b), which are traveling to the right as indicated by the arrow obtained numerically from (6) and (7) for the same with $q_f = 1.600$, $\Omega = 0.05$, and $\epsilon = 0.01270$. The thin full line indicates $\Gamma = \epsilon \cos(q_f x - \Omega t)$. Although the system size is 80π, only the interval between 0 and 20π is displayed, for the sake of clarity.

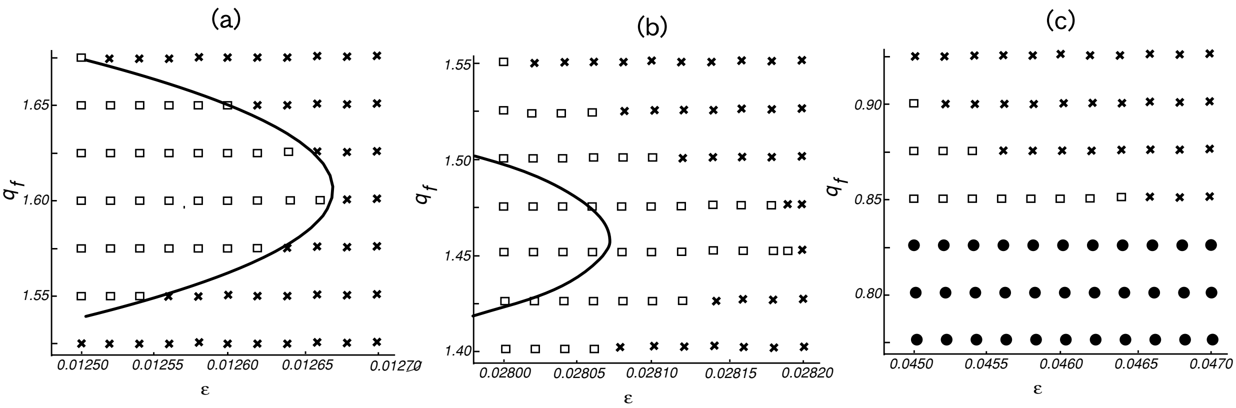

Fig. 3. Behavior in the $q_f - \epsilon$ plane by solving (6) and (7) numerically for (a) $\gamma = 28.0$, (b) $\gamma = 18.0$, or (c) $\gamma = 8.0$. The other parameters are for $D_u = 0.15$, $D_v = 15.0$, $\alpha = 0.5$, and $\beta = 0.04$. When the strength of the forcing is strong enough in the region indicated by $\times$, the periodic pattern entrained completely by external forcing as shown in Fig. 4(a), where the periodic domains travel with the external velocity Ω/q_f. When ϵ is small in the region indicated by $\square$, the domains do not undergo an induced traveling but exhibit a periodic modulation. This can be seen in Fig. 4(b). When q_f is beyond the threshold wave number in the region indicated by $\bullet$, each mode splits into two. This can be seen in Fig. 4(c). The thick line is drawn by Eq. (15).

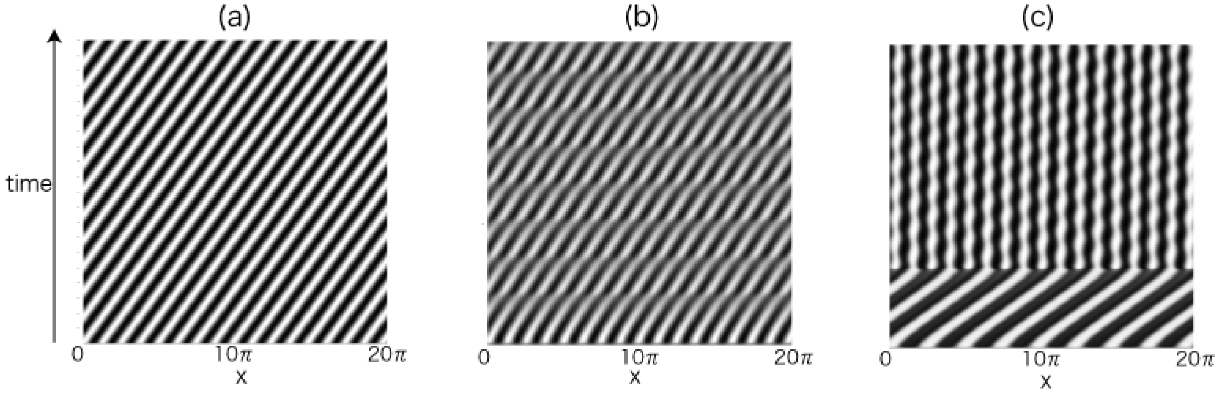

Fig. 4. Space (horizontal) $-$ time (vertical) plot of $u(x,t)$ for $q_f = 1.625$, $\gamma = 28.0$ and (a) $\epsilon = 0.01266$, (b) $\epsilon = 0.01260$, whereas (c) $q_f = 0.825$, $\gamma = 8.0$, and $\epsilon = 0.0466$. The other parameters are $D_u = 0.15$, $D_v = 15.0$, $\alpha = 0.5$, and $\beta = 0.04$ in Eqs. (6) and (7). The value of u is larger (smaller) for lighter (darker) regions. No modulation appears in (a). The modulation occurs periodically in time but uniformly in space in (b). The wave number of the external forcing is beyond the ranges of intrinsic wave number in Eqs. (6) and (7) in (c).