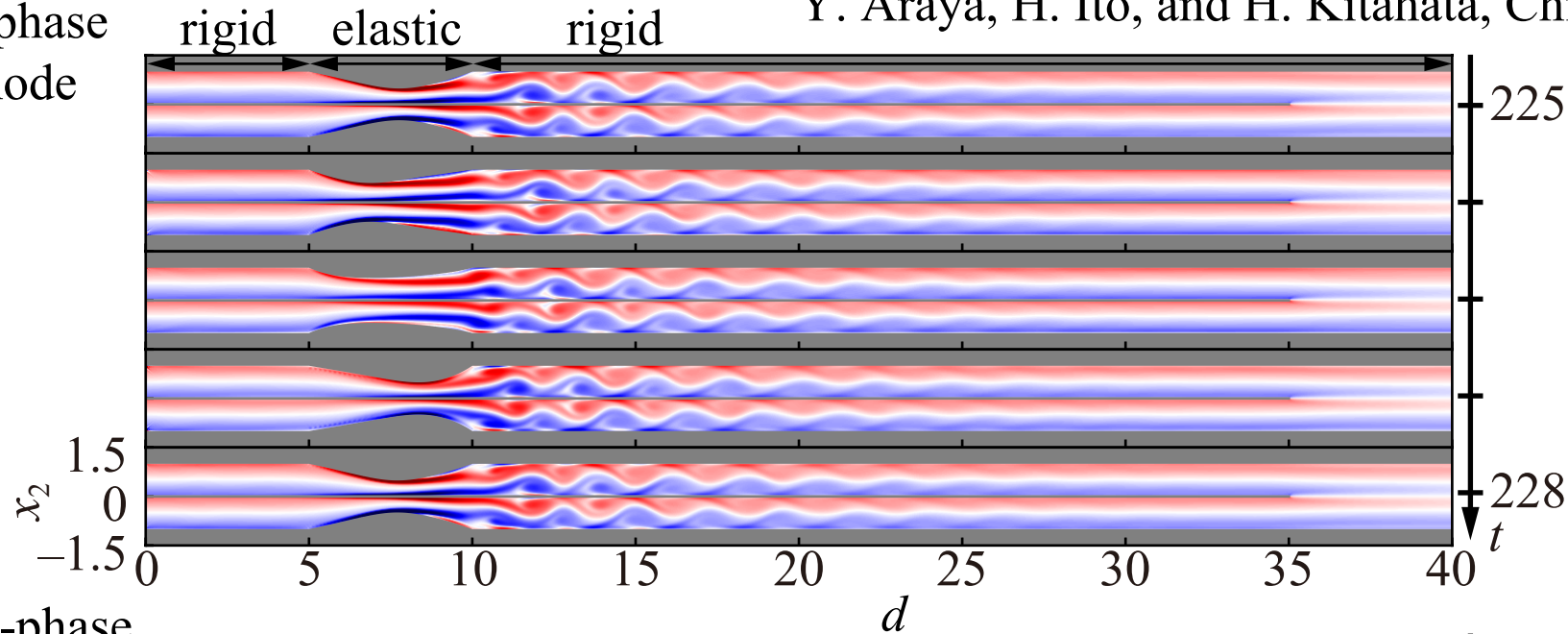


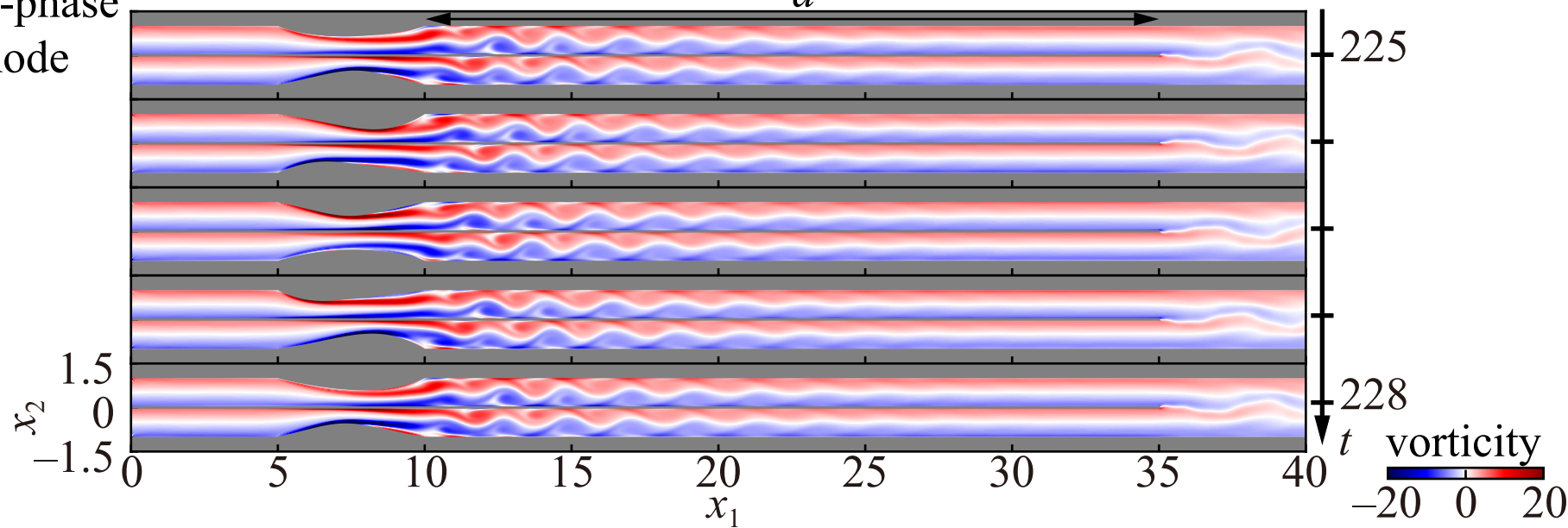
## 2. Hydrodynamic simulation of synchronized oscillatory flows in two coupled collapsible tubes

Y. Araya, H. Ito, and H. Kitahata, Chiba univ.

In-phase mode



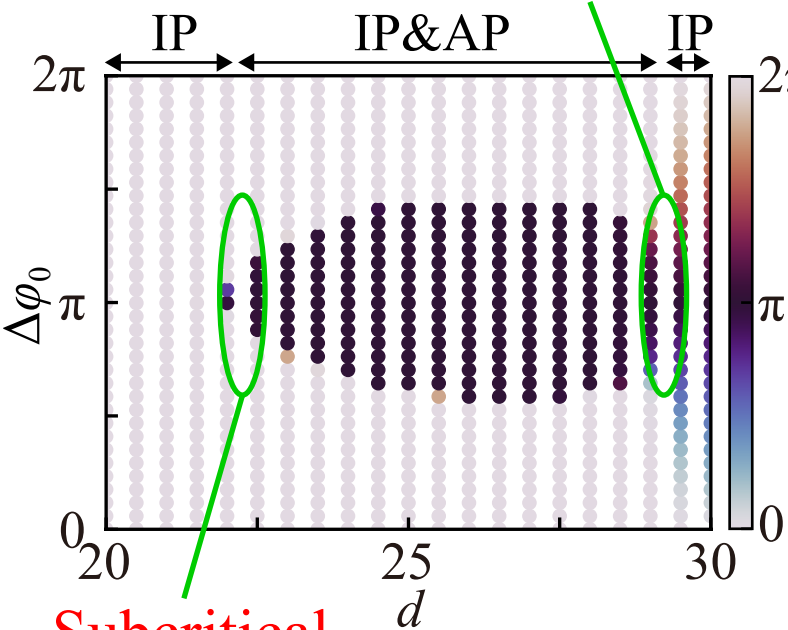
Anti-phase mode



## 2. Hydrodynamic simulation of synchronized oscillatory flows in two coupled collapsible tubes

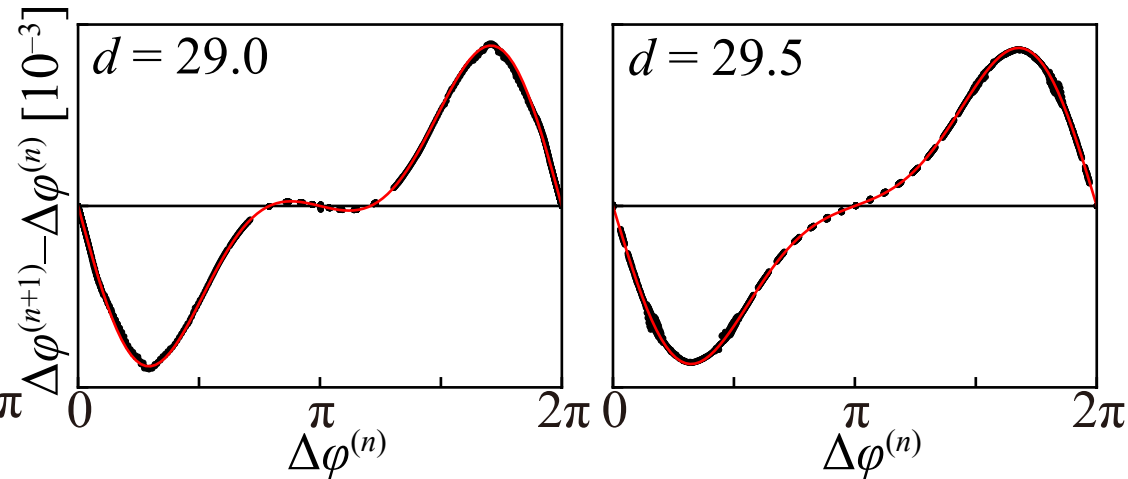
**Subcritical pitchfork bifurcation**

discussed using only the phase difference



**Subcritical Neimark-Sacker bifurcation**

discussed using both the phase difference and amplitude



In-phase and anti-phase modes are bistable for middle  $d$ .

We clarify the bifurcation structure at two bifurcation points where the stability of anti-phase mode changed.

