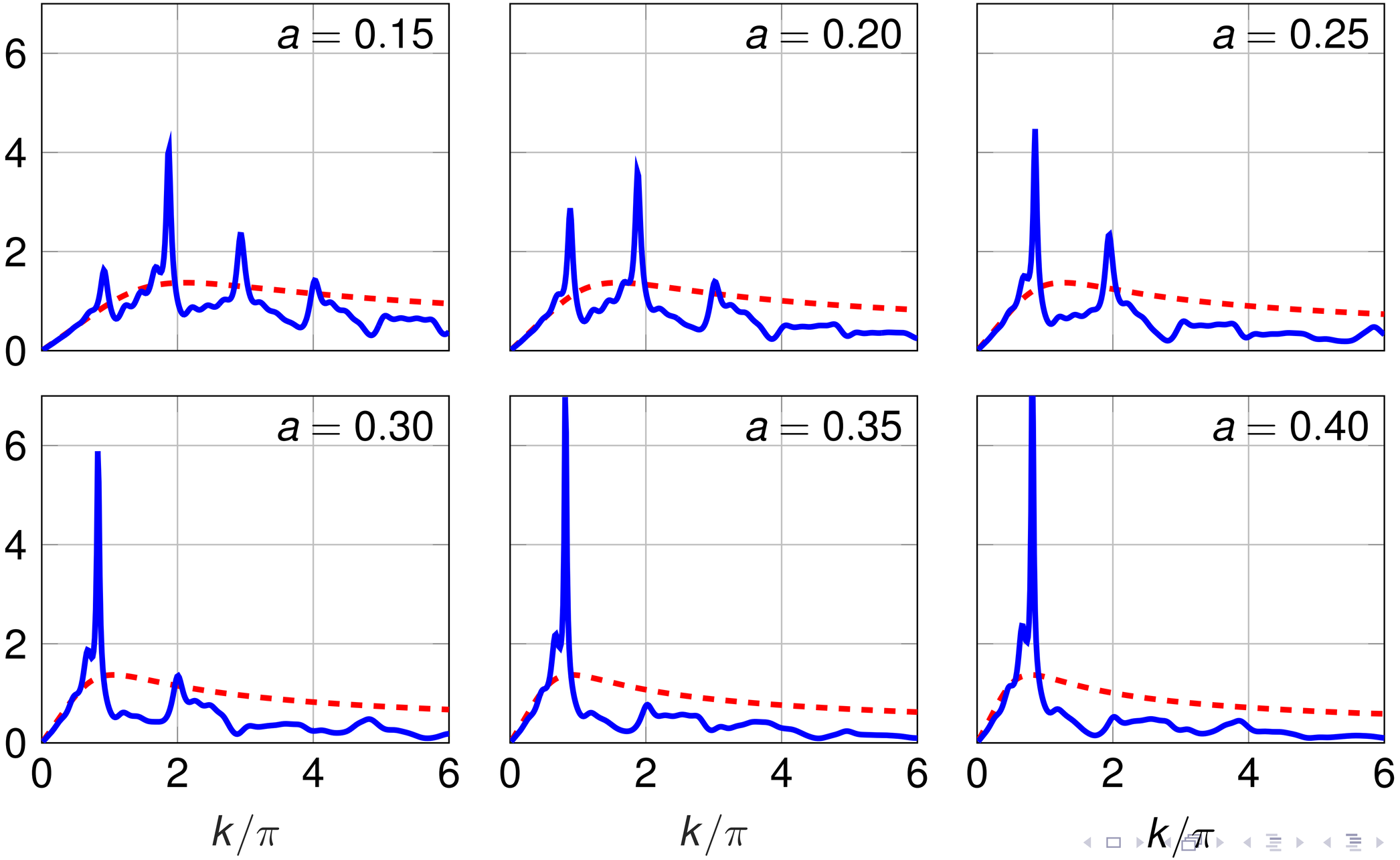
Resonant structure: $N = 9$ (blue); $N = 1$ (red)

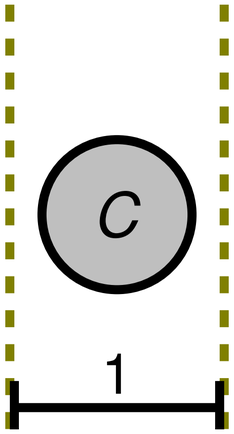


New approach: Transfer operators and directional spectrum

Generalised channel problem

$$\phi_-^{\rightarrow} = \int_{\Gamma_\rightarrow} a_-(\chi)\varphi(x+0.5, y:\chi)\,\mathrm{d}\chi \qquad \phi_+^{\rightarrow} = \int_{\Gamma_\rightarrow} b_+(\chi)\varphi(x-0.5, y:\chi)\,\mathrm{d}\chi$$

$$\phi_-^{\leftarrow} = \int_{\Gamma_\leftarrow} b_-(\chi)\varphi(x+0.5, y:\chi)\,\mathrm{d}\chi \qquad \phi_+^{\leftarrow} = \int_{\Gamma_\leftarrow} a_+(\chi)\varphi(x-0.5, y:\chi)\,\mathrm{d}\chi$$



- $\Gamma_\rightarrow = \{\gamma \in \mathbb{R} : -\pi/2 < \gamma < \pi/2\}$ + complex branches; $\Gamma_\leftarrow = \Gamma_\rightarrow + \pi$