

# Frequency- momentum representation of soliton-breathers in a 2D hexagonal crystal lattice

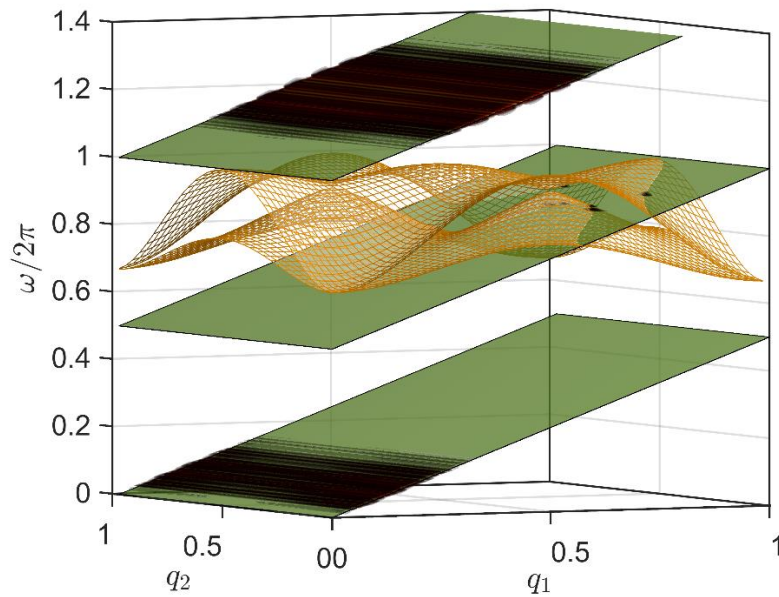
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In this work we study spectral properties of exact travelling waves in a 2D hexagonal crystal lattice model of muscovite mica [1]. The theory of exact traveling waves [2] is extended to two dimensions and can also be easily extended to three [3]. Generically, these waves are composed of a localized solution and a wing, that is, an extended solution of constant amplitude. In the  $\omega - k$  representation, they are within resonant planes, each plane corresponding in the moving frame to a single frequency. These frequencies are integer multiples of a frequency called the fundamental frequency. A discrete breather is within a resonant plane called the breather plane and has a single frequency in the moving frame. The spectral representation of a soliton-breather can be seen in the figure.



**Fig. 1.** Isosurface of the XYTFT of an exact soliton-breather, together with the resonant planes and the phonon surfaces.

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## References

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