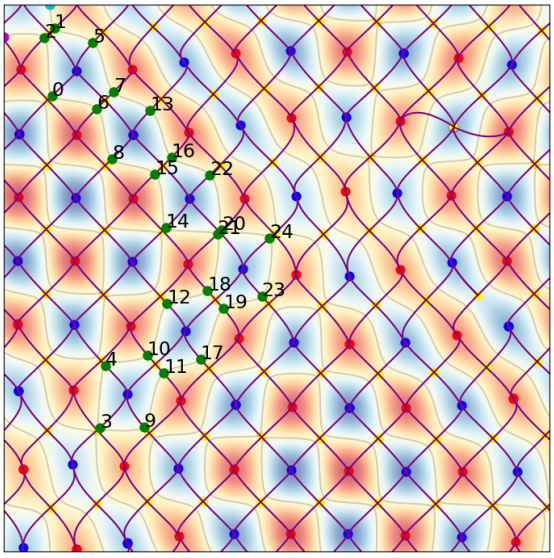
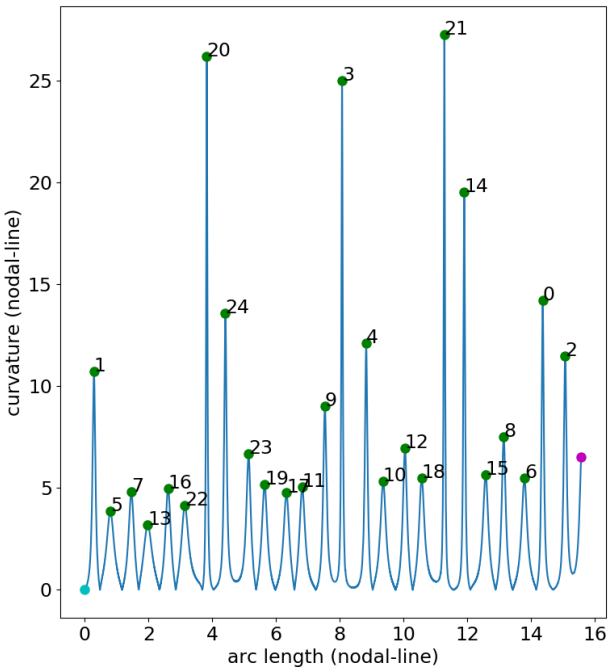
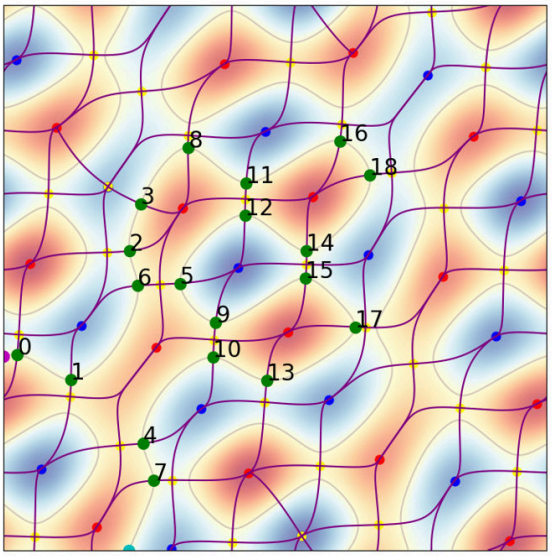
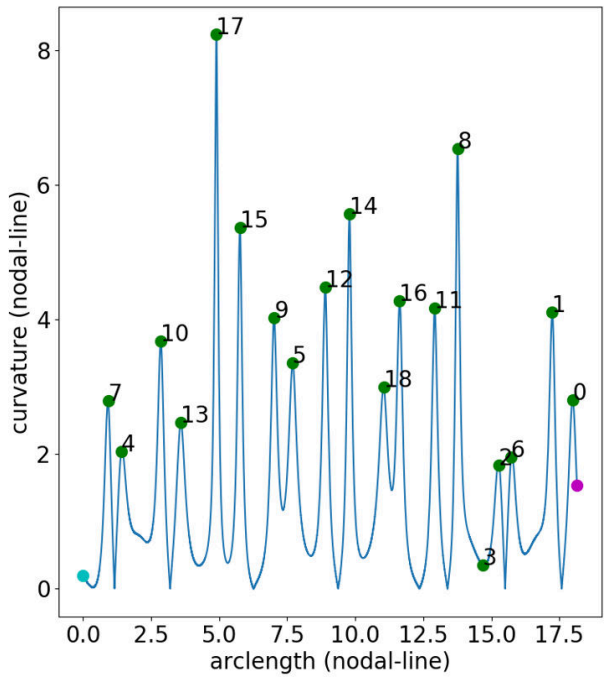
## Curvature of nodal lines at nodal-Neumann line intersections







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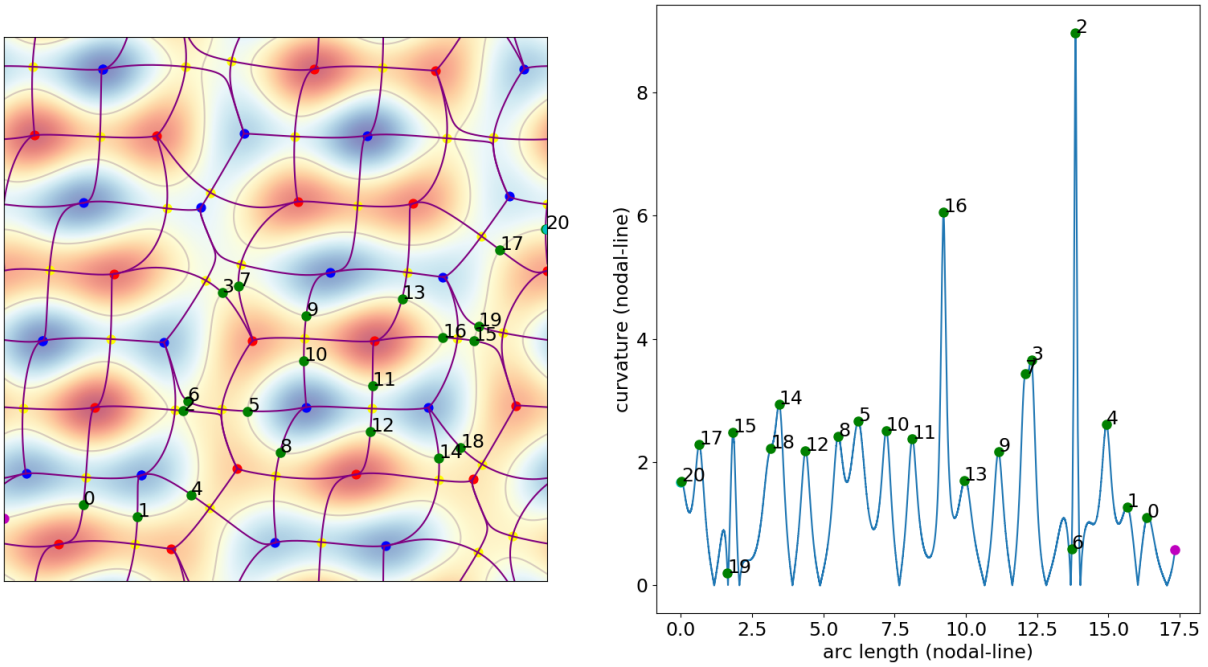


Intersection points (green balls and enumerated) of Neumann lines (purple) and nodal lines (gray); left: Neumann domains (blue+red and enclosed by Neumann lines) and Neumann lines (purple), nodal lines (gray), nodal domains (blue or red and enclosed by nodal lines), saddles (yellow), extrema (red,blue); right: curvature (y-axis) of a specific nodal line (supporting the green intersection balls) parametrized by its arc length (x-axis) starting at a cyan ball and ending at a purple ball. The python program producing the plots is based on `https://github.com/inclement/neumann` (A. Taylor).

All three plots correspond to eigenfunctions of the Laplacian on the flat torus corresponding to the degenerate eigenvalues $\lambda = 41, 17, 17$ (in chronological order). Notice that the point $3$ in the second plot and the points $19, 6$ in the third plot don't satisfy the local extremal property for the curvature at nodal-Neumann line intersections. The first plot exhibits such an behavior being 'closer' to an separable eigenfunction.