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## Publication

### A one-parameter family of interpolating kernels for smoothed particle hydrodynamics studies

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A set of interpolating functions of the type  $f(v) = \{\sin(v\pi/2)/(v\pi/2)\}^n$  is analyzed in the context of the smoothed-particle hydrodynamics (SPH) technique. The behaviour of these kernels for several values of the parameter  $n$  has been studied either analytically as well as numerically in connection with several tests carried out in two-dimensions. The main advantage of this kernel relies in its flexibility because for  $n=3$  it is similar to the standard widely used cubic-spline, whereas for  $n>3$  the interpolating function becomes more centrally condensed, being well suited to track discontinuities such as shock fronts and thermal waves.

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