

# wave

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## 1 Theory

The wave equation in one-dimensional form is written as

$$\frac{\partial u}{\partial t} + c \frac{\partial u}{\partial x} = 0, \quad (1)$$

where  $u$  is the wave distribution in space  $x$  and time  $t$ , and  $c$  is wave velocity.

## 2 Methods

2.1 Forward Euler

2.2 Euler Backward

2.3 Forward Time Central Space (FTCS)

2.4 Hybrid Method

2.5 Lax

2.6 Lax-Wendroff

2.7 Leapfrog

2.8 2nd order in time, 4th order in space

## 3 Wave shape

<AxesSubplot:>

