

Wave Propagation and Reflection II

```
Clear["Global`*"];
Off[General::spell1];
```

- Define a Gaussian wave packet propagating in the +x direction with $v=1$ and which is reflected at $x = 10$ (simulated using a virtual wave propagating to the left). The coefficient of the virtual wave (c_{ref}) gives open-ended ($=+1$) or closed-end ($=-1$) reflection.

```
wave[x_, t_] = e-(x-v t)2 + cref e-(x-2 xref +v t)2;

val = {v → 1, xref → 10, cref → +1};
```

- Make a movie by plotting the wave function as a function of x for successive values of t (and also show the virtual wave at $x > x_{ref}$)

```
wplot[t_] := Plot[wave[x, t] /. val, {x, -2, 22},
  GridLines → Automatic, Frame → True, PlotRange → {{-2, 22}, {-2, 2}},
  PlotStyle → {RGBColor[1, 0, 0]}, FrameLabel → {"x", "f"}, RotateLabel → False];

plotarray = Table[wplot[tp], {tp, 0, 20, 1}];
```

