

## Check on the Analytical Solution

```
# Let  $T = 1$ s and  $a = 1$ 
figure(figsize=(6, 2))
a = 1
t = arange(-1, 3.001, .001)
x = ssd.step(t) - ssd.step(t-1)
h = a*exp(-a*t)*ssd.step(t)
y, ty = ssd.conv_integral(x, t, h, t)
plot(ty, y)
```

} Generate  $x(t)$  and  $h(t)$   
then numerically convolve  
with *scipy.signal.convolve*  
used in the core calculation

(...Repeat for two more plots with  $a = 5$  and  $10$ )

Numerical Convolution Filter Output for  $T=1$

