

Catastrophic Cancellation

In [1]:

```
#keep  
import numpy as np
```

Let's make two numbers with very similar magnitude:

In [2]:

```
#keep  
x = 1.48234  
y = 1.48235
```

Now let's compute their difference in double precision:

In [3]:

```
#keep  
x_dbl = np.float64(x)  
y_dbl = np.float64(y)  
diff_dbl = x_dbl-y_dbl  
  
print(repr(diff_dbl))
```

```
-1.00000000000065512e-05
```

- What would the correct result be?
- What has happened here?

Can you predict what will happen in single precision?

In [4]:

```
#keep  
x_sng = np.float32(x)  
y_sng = np.float32(y)  
diff_sng = x_sng-y_sng  
  
print(diff_sng)
```

```
-1.00136e-05
```

In []: