# NumPy

Efficient Arrays and Numerical Computing for Python

# Numerical Python

Provides efficient storage and operations on dense data buffers, i.e., arrays.

```
In [1]: import numpy as np
```

# NumPy Basics

Arrays have fixed data type

```
In [2]: nums = [1, 2, 3.14]

In [3]: nums
Out[3]: [1, 2, 3.14]

In [4]: np.array(nums)
Out[4]: array([ 1. , 2. , 3.14])

In [5]: type(Out[4][0])
Out[5]: numpy.float64
```

- Notice that the values were converted to floats.

You can specify an explicit element type with the `dtype` keyword argument:

```
In [6]: np.array(nums, dtype='int')
Out[6]: array([1, 2, 3])
```

# NumPy Array Attributes

## NuMpy arrays have attrributes

for the first viable Beamer setup in Org

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