ex2

March 27, 2025

[1]:
```
import numpy as np
import matplotlib.pyplot as plt
from astropy.io import fits
from astropy.table import Table
from astropy import units as u
plt.ion()
import os
```

[2]:
```
a = 50.0 * u.meter
b = [23, 45, 88] * u.meter
print(a)
print(b)
```

```
50.0 m
[23. 45. 88.] m
```

[3]:
```
np.mean(b)
```

[3]: $52\ \mathrm{m}$

[4]:
```
15 * u.meter / (3 * u.second)
```

[4]: $5\ \frac{\mathrm{m}}{\mathrm{s}}$

[5]:
```
x = 62 * u.parsec
print(x)
```

```
62.0 pc
```

[6]:
```
y = 45 * u.parsec
```

[7]:
```
x /y
```

[7]: 1.3777778

[8]:
```
z = x.value
z
```

[8]: np.float64(62.0)

[9]:
```
z = x.value / y.value
```

[10]:
```
z
```

[10]:
```
np.float64(1.3777777777777778)
```

[11]:
```
np.around(z, decimals=2)
```

[11]:
```
np.float64(1.38)
```

[12]:
```
type(x)
```

[12]:
```
astropy.units.quantity.Quantity
```

[13]:
```
print (type(x))
print (type(z))
print (type('Python'))
print (type(2.0))
print (type(int(2.0)))
print (b)
print (c)
```

```
<class 'astropy.units.quantity.Quantity'>
<class 'numpy.float64'>
<class 'str'>
<class 'float'>
<class 'int'>
[23. 45. 88.] m
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[13], line 7
      5 print (type(int(2.0)))
      6 print (b)
----> 7 print (c)

NameError: name 'c' is not defined
```

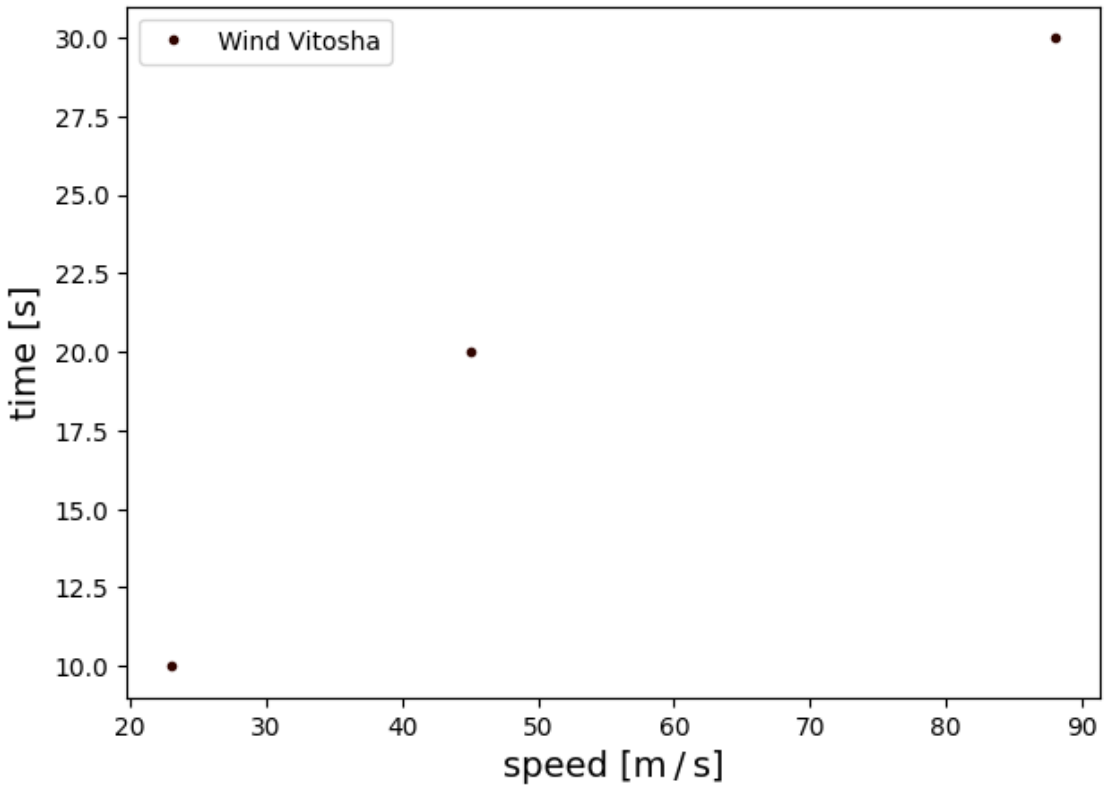
[14]:
```
time = [1, 1, 1] * u.second
print (time)
speed = b/time
print (speed)
```

```
[1. 1. 1.] s
[23. 45. 88.] m / s
```

[15]:
```
plt.figure(figsize=(7,5))
plt.plot(speed, [10, 20, 30], ls='', color='#300500', marker='.', label='Wind␣
↪Vitosha')
```

```
plt.xlabel("speed [m\u2009/\u2009s]", fontsize=14)
plt.ylabel("time [s]", fontsize=14)
plt.legend()

l1 = np.linspace(0, 100, 2)
l2 = np.linspace(0, 100, 2)
#plt.plot(l1, l2, color='gray', ls='--')
```



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