

Histogramme et évaluation de l'incertitude-type de type A sur une série de mesures

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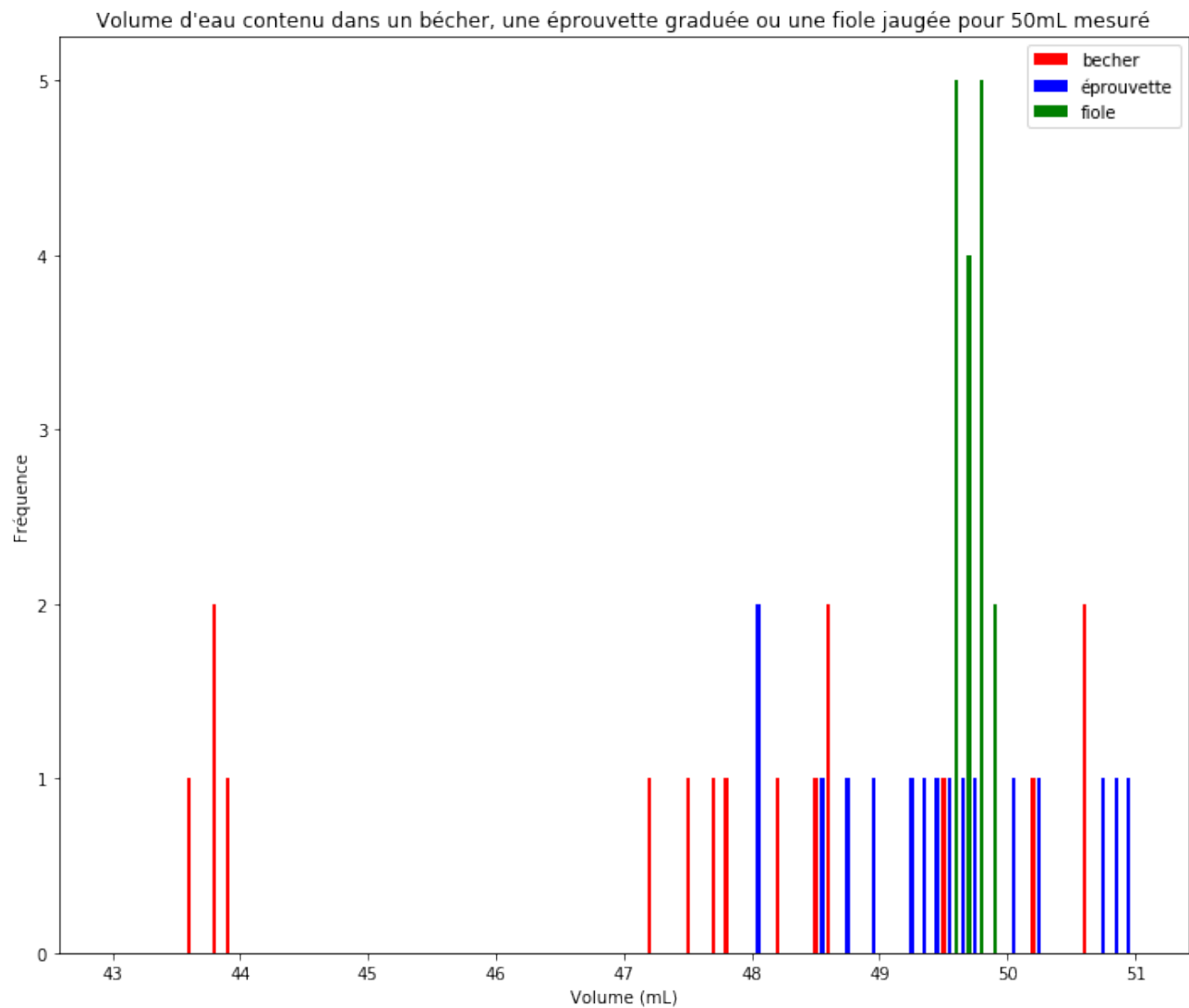
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In [1]:

```
import matplotlib.pyplot as plt
%matplotlib inline
import numpy as np
```

In [2]:

```
Vbecher=[50.65,48.26,47.83,47.76,50.26,47.23,43.88,43.92,48.69,48.66,43.67,47.53,49.55,50.
→64,43.8,48.53]
Veprouvette =[49.61,49.55,50.91,50.87,48.03,50.29,48.58,48.06,50.06,50.72,48.95,49.4,49.
→21,49.31,49.78,48.77]
Vfirole=[49.74,49.77,49.71,49.75,49.52,49.8,49.61,49.56,49.65,49.65,49.52,49.64,49.74,49.
→81,49.5,49.59]
plt.figure(figsize=(12,10))
plt.hist(Vbecher,bins=80,range=(43,51),align="left",rwidth=0.3,color="r",label="becher")
plt.hist(Veprouvette,bins=80,range=(43,51),align="mid",rwidth=0.
→3,color="b",label="éprouvette")
plt.hist(Vfirole,bins=80,range=(43,51),align="right",rwidth=0.3,color="g",label="firole")
plt.title("Volume d'eau contenu dans un bécher, une éprouvette graduée ou une fiole jaugée,
→pour 50mL mesuré")
plt.xlabel("Volume (mL)")
plt.ylabel("Fréquence")
plt.legend()
plt.show()
```



In [3]:

```
def statistique(x):
    moy=np.mean(x)
    ecarttype=np.std(x)
    effectif=len(x)
    incertitudetype=ecarttype/np.sqrt(effectif)
    return (moy,ecarttype,effectif,incertitudetype)
```

In [4]:

```
statistique(Vbecher)
```

Out [4]:

```
(47.553749999999994, 2.378105535399974, 16, 0.5945263838499935)
```

In [5]:

```
statistique(Veprouvette)
```

Out [5]:

```
(49.506249999999994, 0.8814042418209694, 16, 0.22035106045524236)
```

In [6]:

```
statistique(Vfiole)
```

Out [6]:

```
(49.66, 0.10012492197250353, 16, 0.025031230493125882)
```

In []: