In [16]:

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from scipy.signal import spectrogram, periodogram
import scipy.interpolate
```

In [17]:

```python
df = pd.read_csv("./Datasets/Monday/LR04stack.csv", names=["Age", "d18"], skipro
ws=1)
```
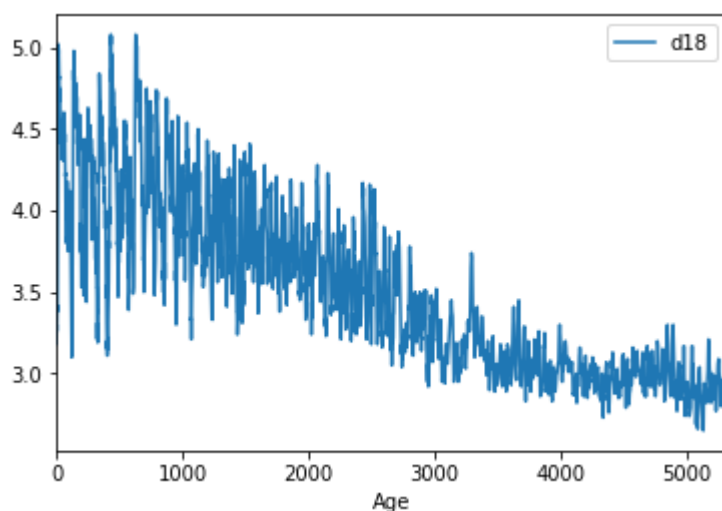
In [18]:

```python
df.head()
```

Out[18]:

	Age	d18
0	0.0	3.23
1	1.0	3.23
2	2.0	3.18
3	3.0	3.29
4	4.0	3.30

In [19]:

```python
df.plot(x="Age", y="d18")
```

Out[19]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fafa56974a8>
```

In [20]:

```
age = np.arange(0, 5000)
fd18 = scipy.interpolate.interp1d(df["Age"], df["d18"])
d18 = fd18(age)
df = pd.DataFrame({"Age":age, "d18":d18})
```

In [21]:

```
f, p = periodogram(df["d18"])
```

In [22]:

```
df1 = df[df["Age"]<=1e3]
df5 = df[df["Age"]<=5e3]
```
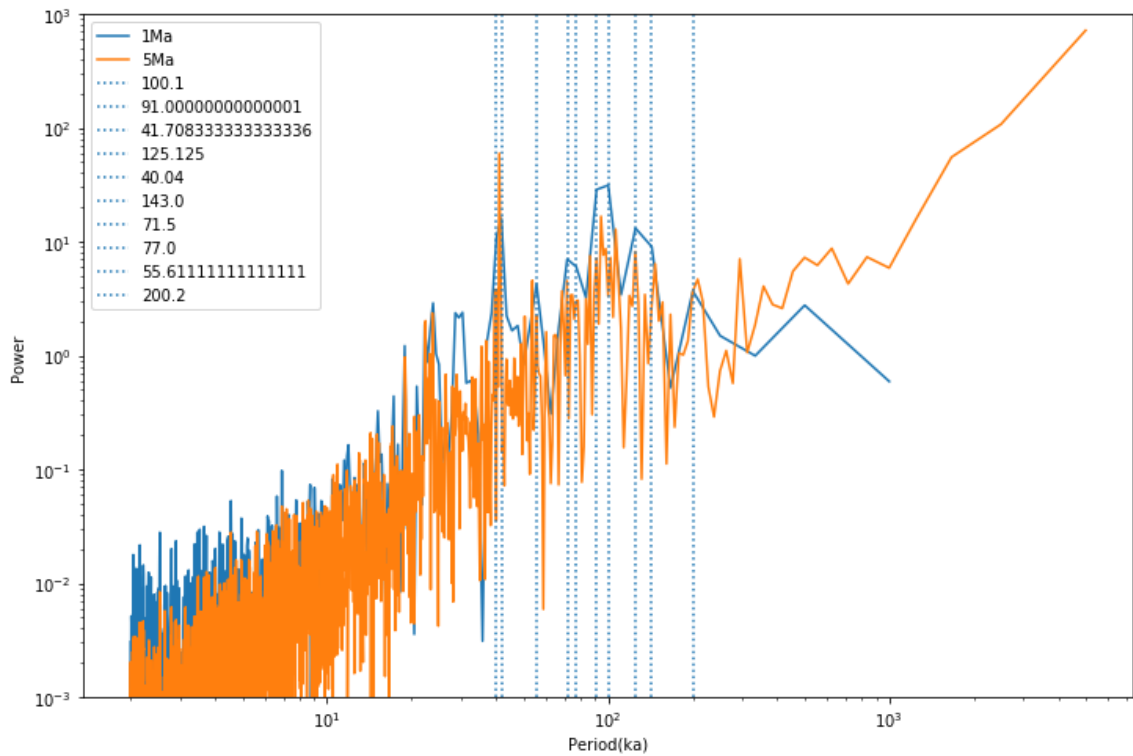
In [23]:

```
f1, p1 = periodogram(df1["d18"])
f5, p5 = periodogram(df5["d18"])
```

In [25]:

```python
plt.figure(figsize=(12,8))
plt.loglog(1/f1, p1, label="1Ma")
plt.loglog(1/f5, p5, label="5Ma")
peaks = np.argsort(p1)[::-1]
for k in range(10):
    per = 1/f1[peaks[k]]
    plt.axvline(per, label=f"{per}", ls=":")
# plt.axvline(1/f1[np.argmax(p1)], label=f"{1/f1[np.argmax(p1)]}")
plt.ylim(1e-3,1e3)
plt.xlabel("Period(ka)")
plt.ylabel("Power")
plt.legend()
plt.show()
```

```
/home/hpahl/anaconda3/lib/python3.7/site-packages/ipykernel_launche
r.py:2: RuntimeWarning: divide by zero encountered in true_divide

/home/hpahl/anaconda3/lib/python3.7/site-packages/ipykernel_launche
r.py:3: RuntimeWarning: divide by zero encountered in true_divide
  This is separate from the ipykernel package so we can avoid doing
imports until
```



```
In [ ]:
```