

Analisi dei Dati: esercizi

Elena Cuoco

Una Giornata da ricercatore: 3 Novembre 2011

Simuliamo una onda sinusoidale

Example

```
lanciate lo script ./signal.py --help
```

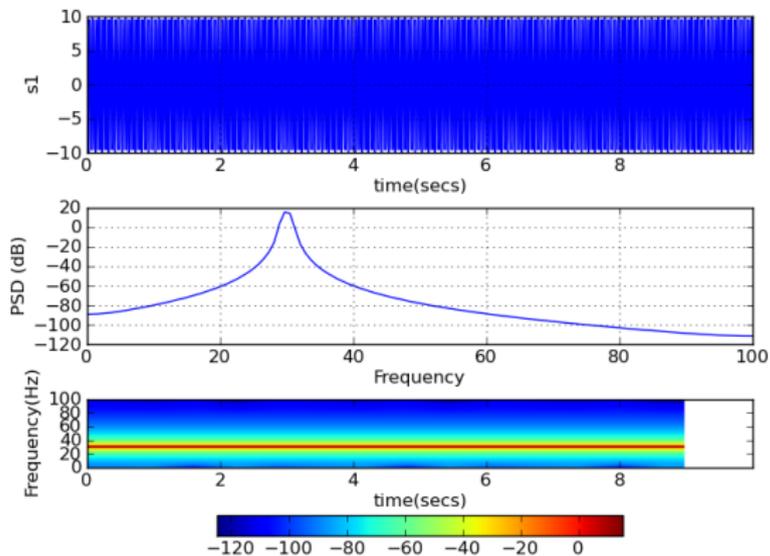
Vi verranno chiesti alcuni parametri. Provate a giocare un po' con i valori

Example

Options:

- h, --help show this help message and exit
- f frequency, --frequency=frequency set the frequency for the signal
- l timeslice, --time=timeslice set the length of simulation
- s sampling, --sampling=sampling set the sampling frequency
- a amplitude, --amplitude=amplitude set the amplitude of waveform

Risultato



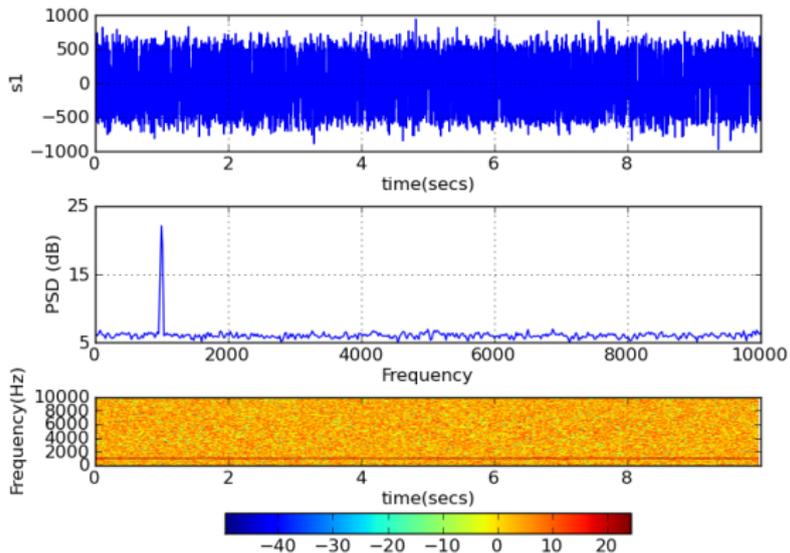
Example

script signalplusnoise.py

Options:

- h, --help show this help message and exit
- f frequency, --frequency=frequency set the frequency for the signal
- s sampling, --sampling=sampling set the sampling frequency
- a amplitude, --amplitude=amplitude set the amplitude of waveform
- n variance, --noise=variance set the amplitude of noise signal
- l timeslice, --time=timeslice set the length of simulation

Example



Example

script twosignal.py

Options: -h, --help show this help message and exit

-f frequency, --frequency=frequency set the frequency for the signal

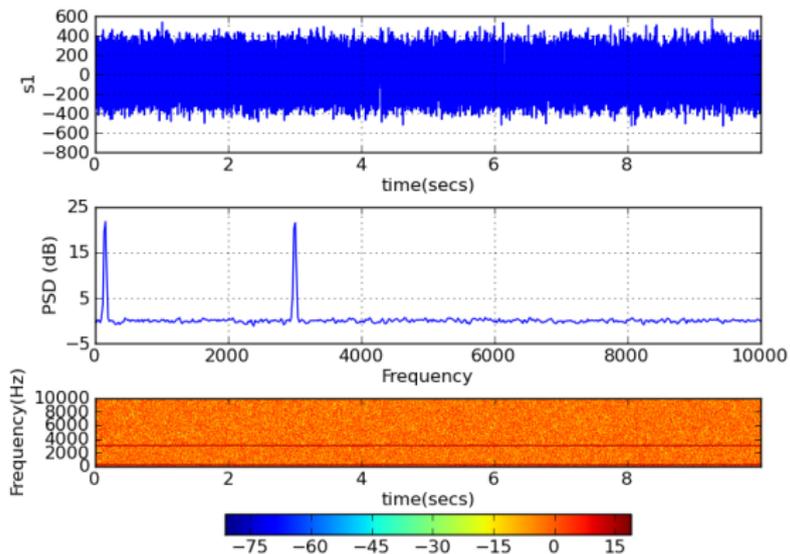
-s sampling, --sampling=sampling set the sampling frequency

-a amplitude, --amplitude=amplitude set the amplitude of waveform

-n variance, --noise=variance set the amplitude of noise signal

-l timeslice, --time=timeslice set the length of simulation

Example



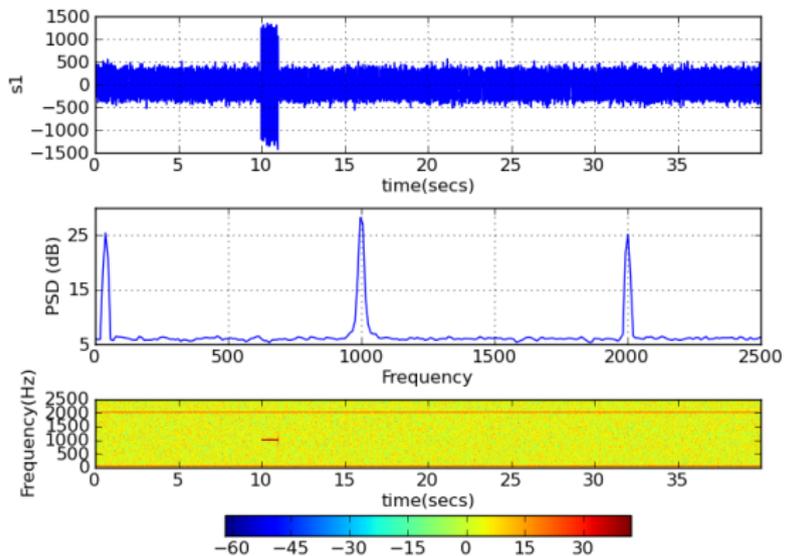
Example

script twosignaltransient.py

Options:

- h, --help show this help message and exit
- f frequency, --frequency=frequency set the frequency for the sinusoid
- o frequency, --omega=frequency set the frequency for the transient
- s sampling, --sampling=sampling set the sampling frequency
- a amplitude, --amplitude=amplitude set the amplitude of waveform
- n variance, --noise=variance set the amplitude of noise signal
- l timeslice, --time=timeslice set the length of simulation

Risultato



Relazione tra segnale e rumore

- 1 Cosa cambiava aumentando l'ampiezza del rumore?
- 2 Quali informazioni puoi ottenere rappresentando il segnale nei diversi domini?
- 3 Se foste ricercatori...Come fareste per trovare il segnale nel rumore? (idee, fantasie, tutto quello che vi viene in mente...)