
Subject: Re: Random numbers with predefined spectral density

Posted by [steinhh](#) on Tue, 22 Aug 1995 07:00:00 GMT

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In article <41ab22\$jp5@rs18.hrz.th-darmstadt.de>, hahn@hrz.th-darmstadt.de (Norbert Hahn) writes:

|>
|> I want to calculate random numbers with other than white noise
|> spectrum. The noise spectrum (amplitude vs. frequency) is
|> given and I need random numbers that adhere to this spectrum.
|>
|> Actually, the spectrum is given by a FIR filter of order 12:
|> coeff = [1.48, 1.64, 0.927, ..., 3.1e-3]
|>
|> How to proceed from here ?
|>
|> Norbert Hahn

Simply produce white noise, and filter it with your desired noise spectrum (beware of the difference between **amplitude** and the **power** spectrum).

Given N = Noise amplitude vs. frequency, an array with NN elements, you simply use:

```
NOISE = fft( fft(randomn(seed,NN),-1)*N , 1)
```

You should also include some renormalization of the total power in your noise, of course.

Stein Vidar
