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Subject: Re: Random numbers with predefined spectral density  
Posted by [David Ritscher](#) on Thu, 24 Aug 1995 07:00:00 GMT  
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> 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]

Just make a white noise sequence and filter it, using these same coefficients, as per the following example:

```
coeff = [ 1.48, 1.64, 0.927, 0, 0, 3.1e-3]  
n_samples = 10000
```

```
n_coef = n_elements(coeff)  
n_samples = 10000 + 2*n_coef
```

```
white = randomn(seed, n_samples)  
colored = convol(white, coeff) ;filter the white noise source  
; throw away the first and last values, some of which were not filtered:  
colored = colored(n_coef:n_samples-1-n_coef)
```

```
; note - although the IDL/PVWave CONVOL function is not really a  
; convolution (i.e., (convol(a, reverse(b)) really performs the convolution  
; of a and b), since this order doesn't change the spectrum of the result,  
; this consideration can be ignored.
```

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David Ritscher

Raum 47.2.279  
Zentralinstitut fuer Biomedizinische Technik (ZIBMT)  
Universitaet Ulm  
D-89069 ULM  
Germany

Tel: ++49 (731) 502 5313  
Fax: ++49 (731) 502 5343  
or 5317

internet: [david.ritscher@zibmt.uni-ulm.de](mailto:david.ritscher@zibmt.uni-ulm.de)

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