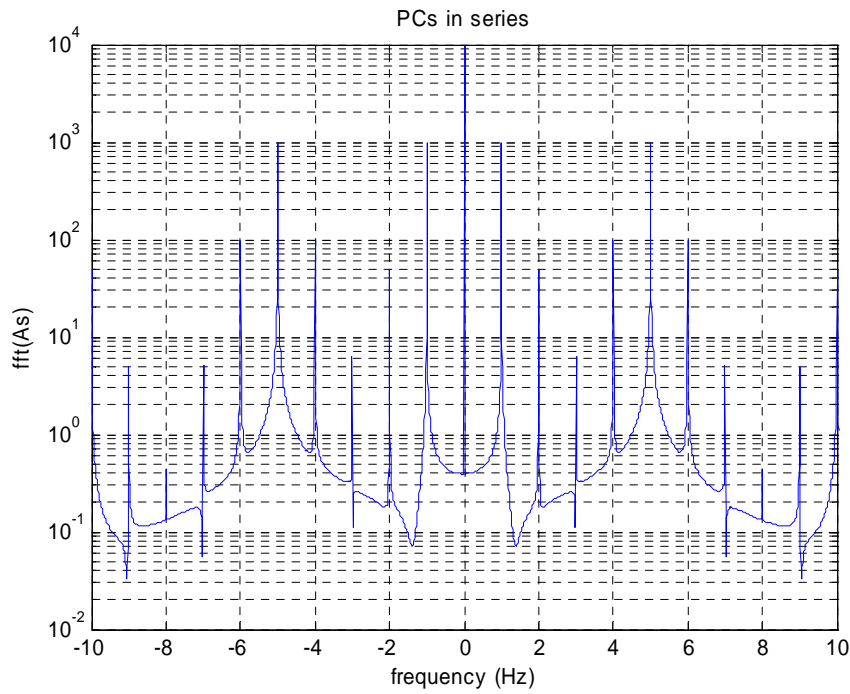


### Synthesizing a Mach Zehnder?

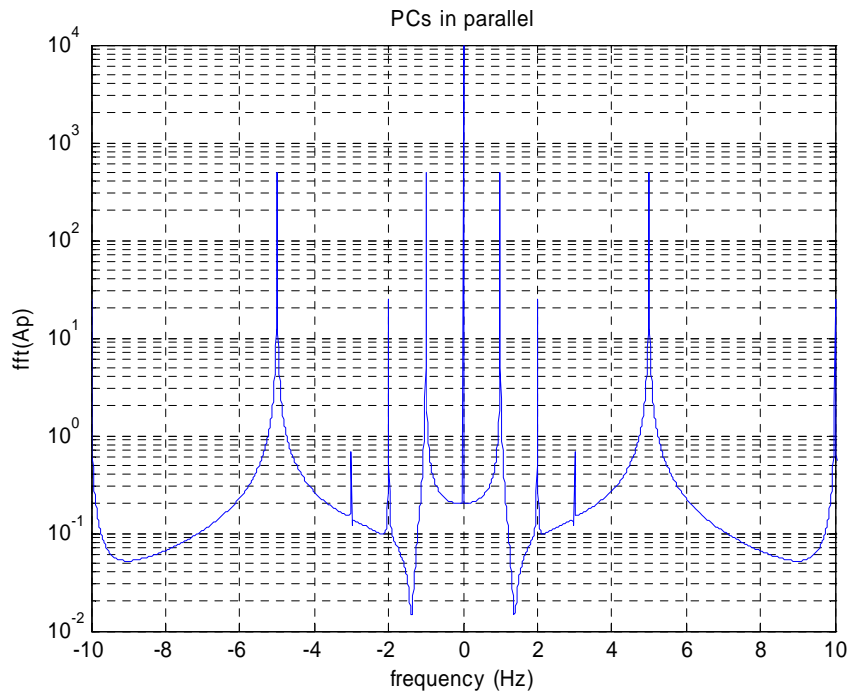
`% two PC in series`

```
As = A0*exp(i*m1*cos(2*pi*f1*t)).*exp(i*m5*cos(2*pi*f5*t));
```



`% two PC in parallel (Mach Zehnder)`

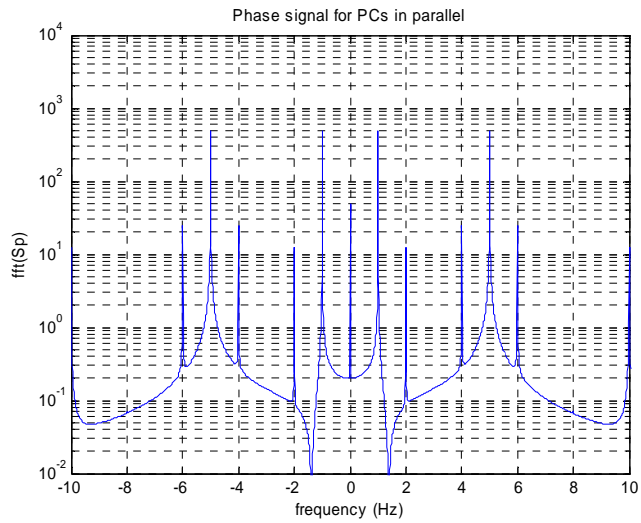
```
Ap = A0*(exp(i*m1*cos(2*pi*f1*t))+exp(i*m5*cos(2*pi*f5*t)))/2;
```



```

% "phase" modulation required for two PC in parallel
Sp = -i*log(Ap/A0);

```



```

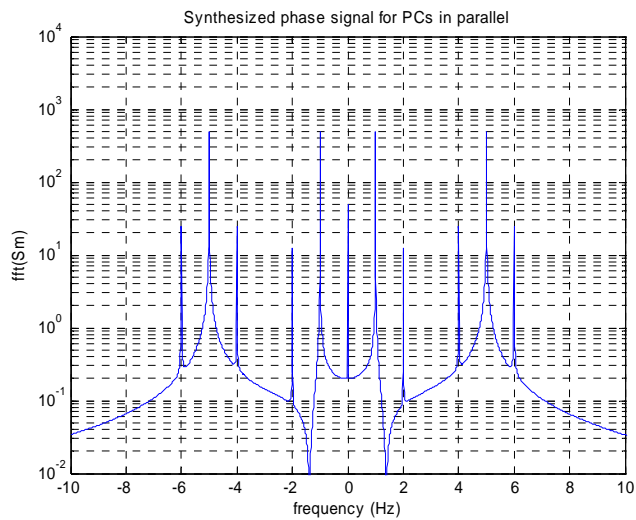
% synthesize a modulation waveform:

```

```

for I=1:7,
    M = cos(wn(I)*t);
    cAs(I) = mean(As.*M);
    cAp(I) = mean(Ap.*M);
    cSp(I) = mean(Sp.*M);
    if (I == 1)
        Sm = cSp(I)*M;
    else
        Sm = Sm + 2*cSp(I)*M;
    end
end

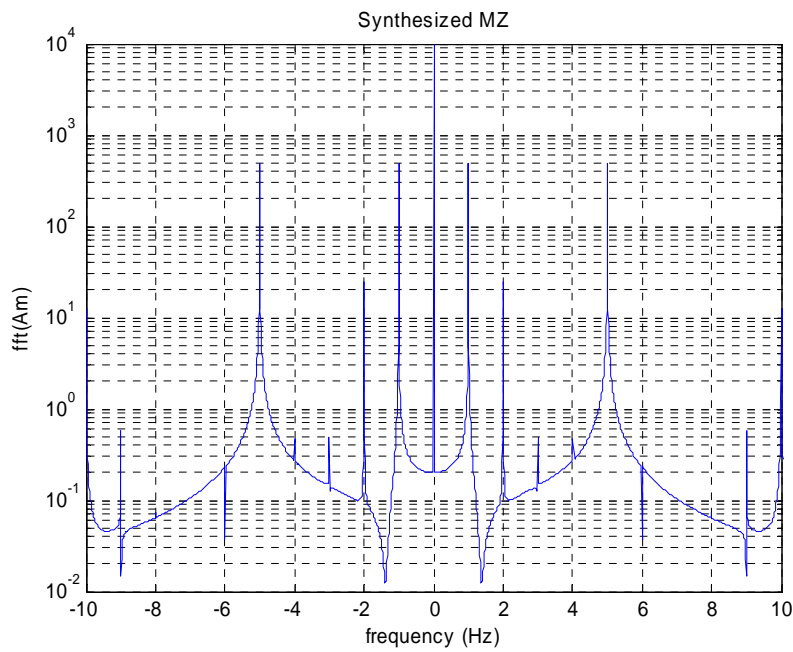
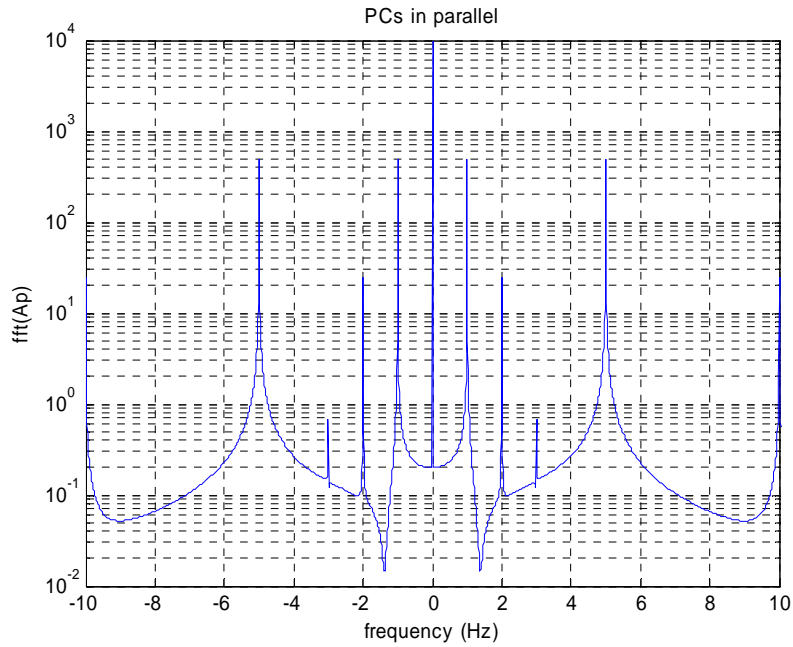
```



```

Am = A0*exp(i*Sm);

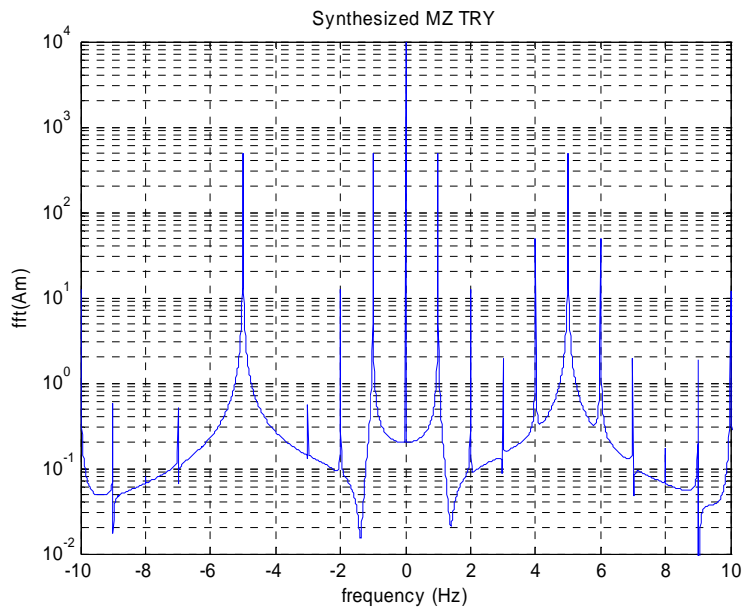
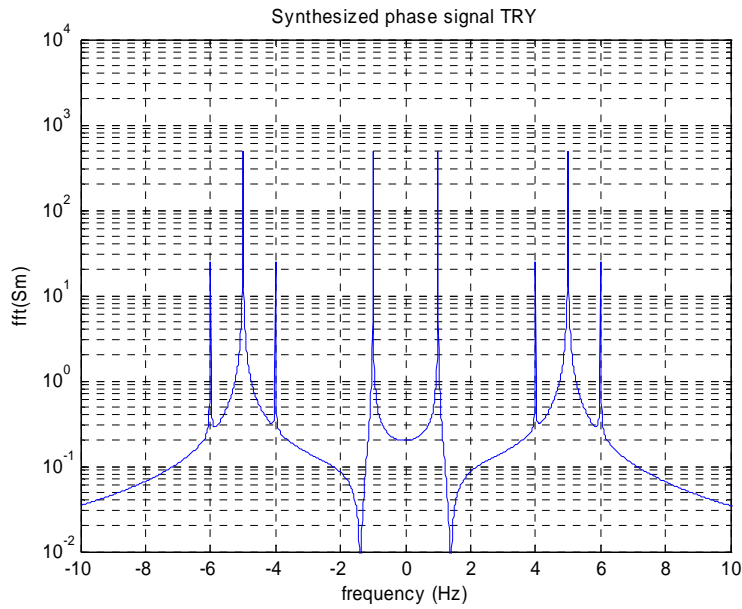
```



```
% print out complex fourier coefficients
% for PCs in parallel, and required phase modulation:
[fn' 1e4*cAp' 1e4*cSp']
```

0	9900.2 -	0.19865i	0.19998 -	50.184i
1	0.97997 -	497.65i	500.15 -	1.964e-014i
2	-23.934 -	0.19865i	0.19998 -	12.562i
3	0.97997 +	0.63252i	0.19998 +	7.1286e-015i
4	1.0008 -	0.19865i	0.19998 +	25.118i
5	0.97997 -	497.65i	500.15 +	3.0675e-014i
6	0.97996 -	0.19865i	0.19998 +	25.123i

Synthesize using just sines and cosines:



```
% This doesn't work:  
% -4f and -6f are suppressed, but +4f and +6f are not.
```