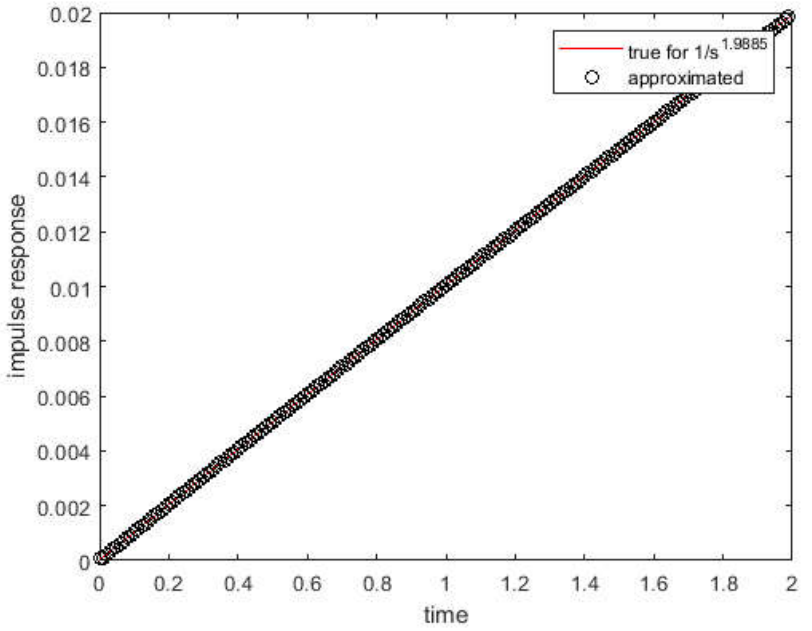
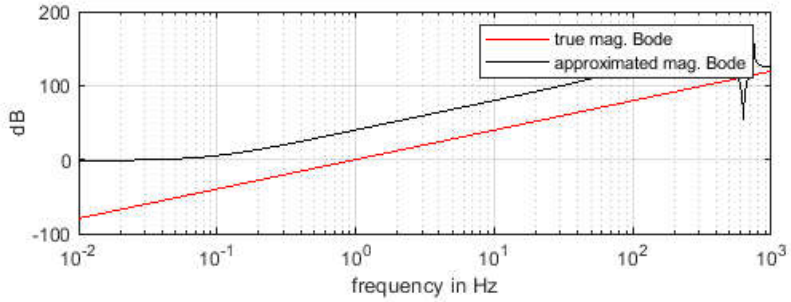
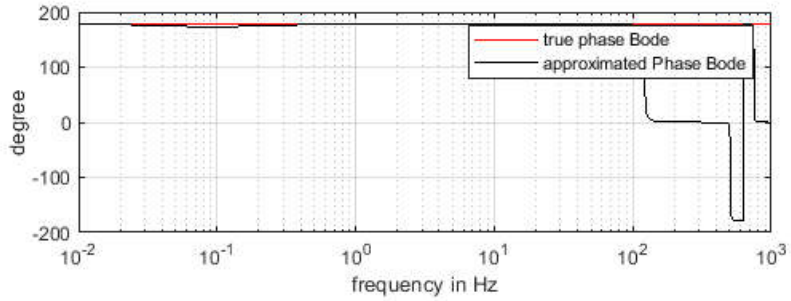
```
% Fractional order proportional derivative controller discretization
% Contact: Bo Shang
% cnpcshangbo@gmail.com
```

Impulse response invariant discretization of fractional order integrators/differentiators

```
gam=0.9885+1;
Ts=.01;
dfod=irid_fod(gam,Ts,5); % Try this method
```







FOPD

```
kp=1.5489;
ki=0.8829;
s=tf('s');
cd=kp*(1+ki*c2d(s,Ts,'tustin')*dfod);

K=0.8592; T1=1.0710;
p=K/(T1*s+1)/s;
pd=c2d(p,Ts,'matched');%plant
```

```
phiz=cd*pd/(1+cd*pd);% this is to calculate the poles
% this link show how poles determines the vibration: http://www.dcsc.tudelft.nl/~sc4060/transp/discreteNOTES.pdf
```