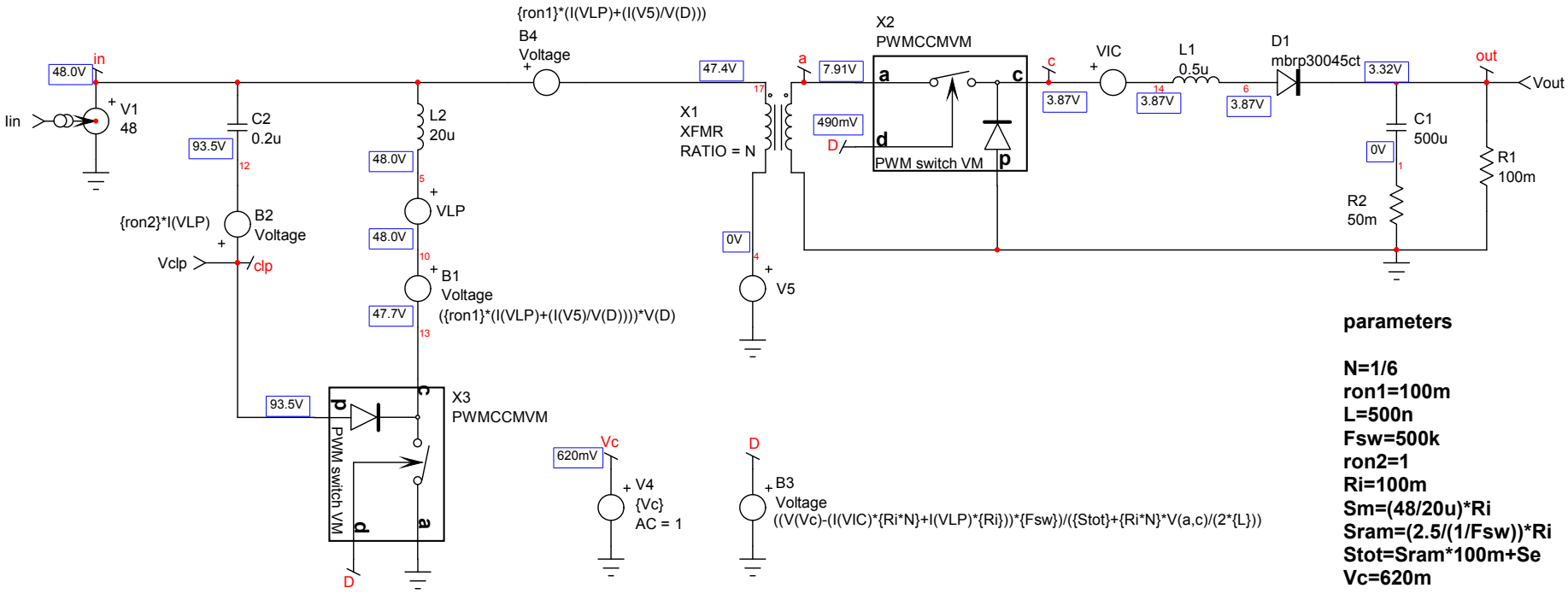
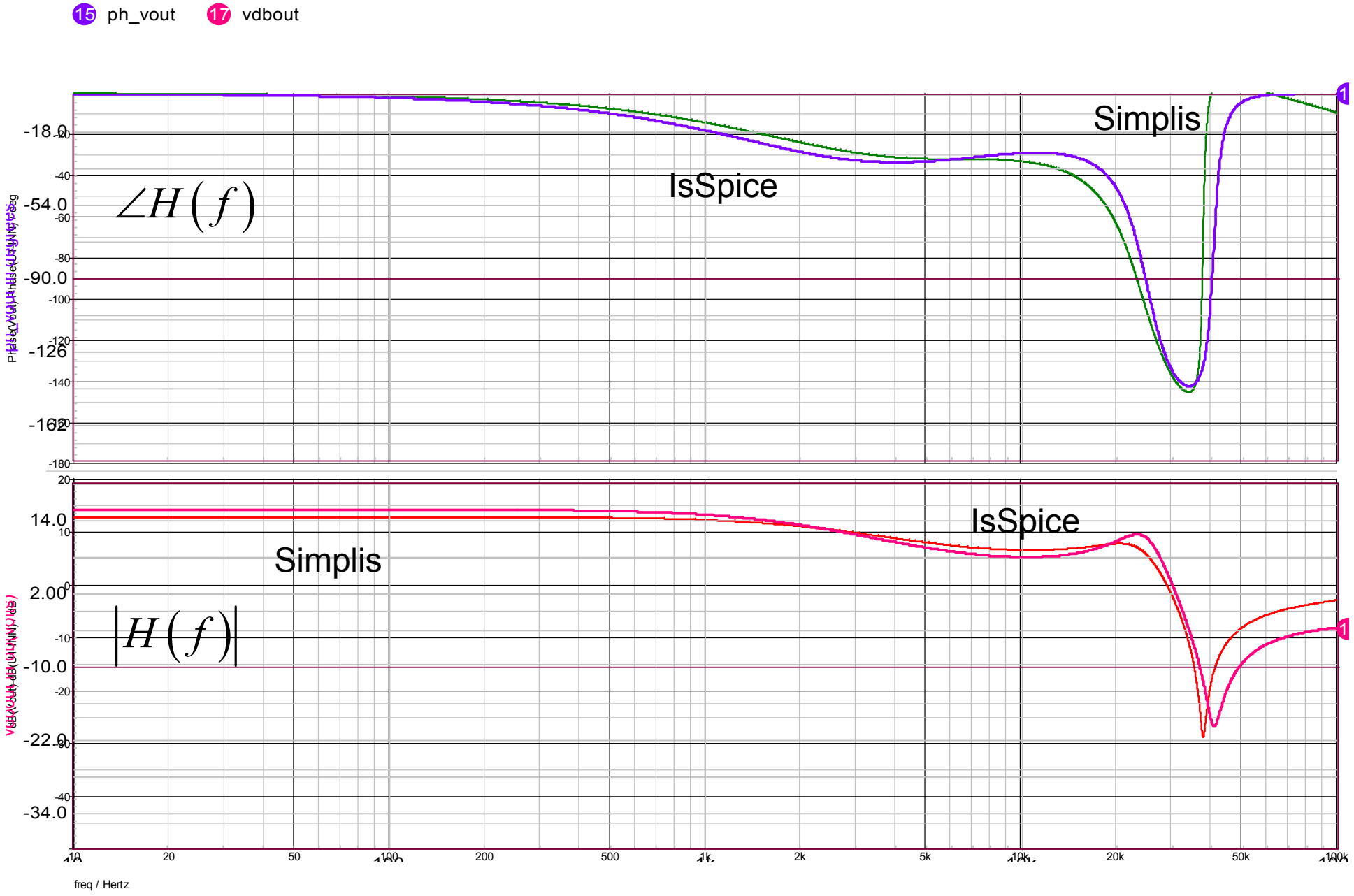
I derived the small-signal response of the Active Clamp Forward (ACF) converter in voltage mode and presented it at APEC in 2014. Once this task was over, I tried to look at the ACF operated in current mode and see the type of response it could deliver. I still used the PWMVM switch model to which I added a duty ratio factory, generating the variable D in relationship to a voltage setpoint V_c and a sense element. Unfortunately, I did not find the time to derive the small-signal response in current mode. However, I was able to compare the ac response brought by my modeling approach to the ac response given by Simplis. The overall shape agrees well but the mismatch in the notch is probably due to an operating point difference. Not a big deal to fix but I had other on-going projects and I left the ACF operated in current mode aside…



B3

((V(Vc)-(I(VIC)*{Ri*N}+I(VLP)*{Ri}))*{Fsw})/({Stot}+{Ri*N}*V(a,c)/(2*{L}))

Christophe Basso - 2014


15 ph_vout
17 vdbout
Simplis
IsSpice
$\angle H(f)$
-18.0
-54.0
-90.0
-126
-162
-180
IsSpice
Simplis
$|H(f)|$
14.0
2.00
-10.0
-22.0
-34.0
10
20
50
100
200
500
1k
2k
5k
10k
20k
50k
100k
freq / Hertz