

Figure 1: Original system setup for simulation (corrected)

Figure 2 is almost identical to figure 1, but uses an enhanced model of the cartridge electrical low pass filter. The 68 k Ω value for the damping resistor is just an example. Using this value, simulation shows that the mechanical resonance filter now can have a $Q = 3.29$ for approximately 2 dB less peaking at 21.5 kHz. The values of C_{m1} and C_{m2} of the mechanical resonance filter are changed accordingly, as are the values of R_{ci} and R_{cg} of the inverse resonance filter.

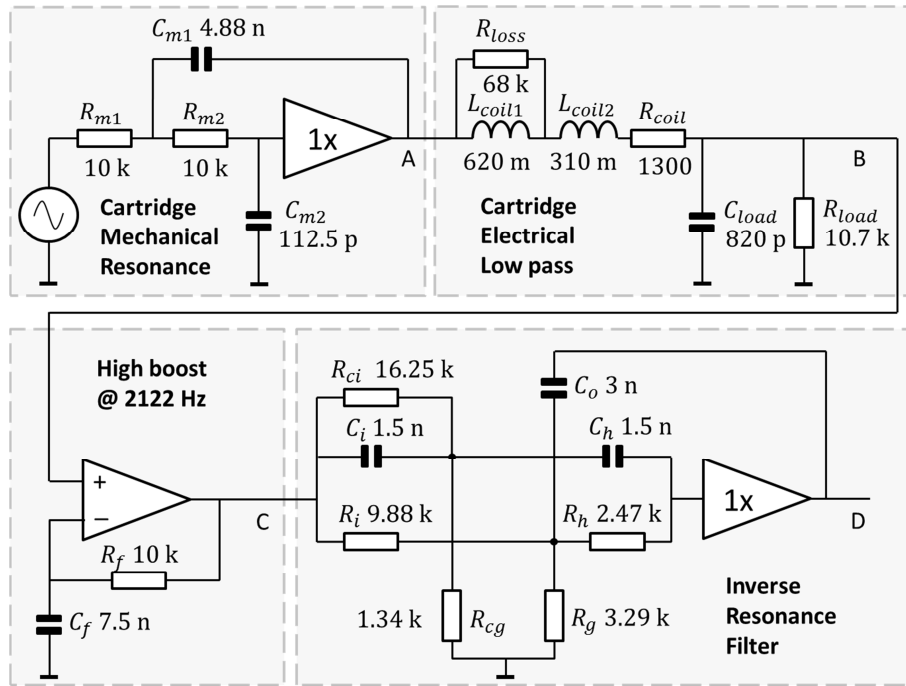


Figure 2: System setup for simulation with enhanced cartridge model

In spite of the addition of R_{loss} , simulation shows that R_{load} can remain 10.7 k Ω to get a first order roll off at approximately 2122 Hz, but then C_{load} must be increased to 820 pF. This load impedance gives virtually the same frequency response for a cartridge including R_{loss} as did the original load impedance (275 pF // 10.7 k Ω) for the cartridge without R_{loss} . Also, figure 10 of the original article, showing the cartridge square wave responses with an over-damped cartridge, remains in essence the same for both cases. So, it appears that (in this case) the addition of R_{loss} can be compensated for completely by increasing the value of C_{load} .

- [1] <http://sound.westhost.com/articles/cartridge-loading.html>
- [2] B. I. Hallgren, "On the noise performance of a magnetic phonograph pickup", JAES, Sept. 1975
- [3] <http://www.google.com/patents/US4140886>
- [4] <http://www.adelcom.net/StantonCart1.htm>