Introduction
This lab is “credit” or “no credit.” There is no formal lab report. You will demonstrate the use of your inverter as a Class D audio amplifier, using 40V solar power input. For speakers, use our four-speaker, 32Ω unit.

“Credit” requires that
- Your inverter produces a quality sinewave output when using a 60Hz Vac wall wart for Vcont,
- Dr. Grady or one of the TA’s hears your music test and approves of the sound quality,
- Both partners are present,
- You complete your demonstration before Thanksgiving.

If necessary, we will have a sign-up sheet. **A 15-minute slot is adequate only if your inverter is working properly before you begin.**

It is OK for you to practice ahead of time if the music station is not busy. It is also OK to enjoy playing music with the station anytime, provided you do not disturb others.

Setup
Connect the solar panel pair with DBR-type capacitor unit to your inverter, and your inverter to the speaker unit. To block any DC current that your inverter might produce, the 32Ω speaker unit is connected in series with 15-paralleled 33µF high-frequency ac capacitors, totaling 495µF. The RC time constant for 32Ω and 495µF is 16msec, which corresponds to a low freq cut-off of 10Hz.

The Music Test
Play your phone or ipod music into Vcont A & B inputs, using one of the 3.5mm stereo-plug-to-dual-audio-plug cables. Cables are provided. Regarding your music selection, the more base, the better. View the speaker input voltage on a scope, using scope filtering. If you see clipping, lower Vcont.

You will see that even at max volume output from your phone or ipod, and max PWM gain, the max current you can draw from the panel pair is about 0.1 or 0.2 amps DC at 40V, corresponding to 4-to-8 watts input. But the speaker volume will be quite loud, and the quality surprisingly good. Stand in front of the speakers to get the full significance of 4-to-8 watts of real music power. The black Panasonic capacitor on your H-Bridge provides the music “punch” power needed for strong sound bursts. To get louder music, you would simply parallel the speakers to lower R and raise p = v^2/R.