

# High-tech venue opens in Hamilton: this is your brain on music ...

Mac's LIVElab welcomes the public for a test drive

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## Laurel Trainor

Gary Yokoyama, *The Hamilton Spectator*

*McMaster University's 100-seat LIVElab will host several musical performances for its official grand opening Saturday. Dr. Laurel Trainor, director of McMaster Institute for Music & The Mind shows off the new sound studio.*

[Hamilton Spectator](#)

By Graham Rockingham

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McMaster University is now home to one of the most-sophisticated, high-tech concert venues in the world. As a matter of fact, the new LIVElab at the McMaster Institute for Music and the Mind (MIMM), maybe one of the finest listening rooms in the world.

Yes, that's quite a boast. If you don't believe it, on Saturday afternoon you can come out and hear for yourself.

MIMM founding director Laurel Trainor is inviting the public to give the acoustics of LIVElab a test drive with a special free concert to mark the facility's official opening. The concert will feature renowned Canadian pianist Catherine Wilson and the Ensemble Vivant, the McMaster Choir and the Hamilton All Star Jazz Band, as well as a demonstration of a remote piano lesson on LIVElab's Yamaha Disklavier piano (more on that later).

The 100-seat, \$8-million theatre on the top of the McMaster Psychology Building is a product of eight years of planning and two years of construction. It is equipped with a state-of-the-art [Constellation sound system](#), designed in Berkeley, Calif., by Meyer Sound, and specially tweaked for the contours of the room.

Double walls, acoustic panelling, a concrete-lined ceiling and a floating floor give it the sonic qualities of a high-end recording studio, isolating the theatre from outside sounds.

On top of that, a complex system of 72 speakers and 20 hanging microphones give technicians the split-second ability to change the room's reverb to reproduce the sound ambience of a cathedral, classroom, restaurant or jazz club.

On a recent visit to LIVElab, Trainor was happy to demonstrate. Clapping her hands, she notes that the sound is virtually dead, no reverb. With one touch of a hand-held computer tablet, the next hand clap resonates with the echo of a concert hall. The effect is extraordinary.

"This is really nice for chamber music," says Trainor, a psychologist known for her groundbreaking work in neuroscience research on musical development in children.

When asked if this may be one of the finest listening rooms in the world, Trainor humbly replies "yes."

"There are other rooms like this, but smaller," she says. "There are very few of this size, I don't know of another one."

As its name suggests, LIVElab was designed as a research facility. LIVE stands for Large Interactive Virtual Environment.

It is rigged so that musicians can wear special electrode-lined caps to measure their brain waves while they perform on stage, gauging their level of interaction with other musicians and the audience. As well, up to 32 members of the audience can be wired to measure their response to the music.

The MIMM researchers can also capture the movements of the musicians, everything from a discreet little toe tap to the arm motions of a conductor, in 3-D computer models.

Among other things, LIVElab will give MIMM's 28 core researchers the unique ability to learn more about how musicians physically and emotionally react to each other, as well as the feedback of the audience.

"That's why people enjoy live music, they interact together, feel part of a group," says Trainor, a neuroscientist who also holds a degree in music from the University of Toronto where she studied flute. "We want to learn more about this interaction. We want to understand how it works."

While all of these brain waves and motion models are important for research, they also make for some interesting visual displays on the hi-def screens at the back of the stage.

On Saturday, you'll actually be able to watch the EEG readings from a violinist with Ensemble Vivant. Pianist Catherine Wilson will also be hooked up to capture her motion, as will Rachel Rensink-Hoff, conductor of the McMaster Choir.

One of the most interesting demonstrations Saturday will be of the Disklavier piano. It's a real nine-foot grand, packed with a bunch of digital enhancements, which — among other things — allow it to be played remotely from anywhere with an Internet connection and another Disklavier. It also stores for replay everything that's played on it. The Disklavier allows for immediate long-distance musical collaboration, as well as some unusual piano classes.

"During the remote lesson Saturday, the teacher will be in Toronto at the Royal Conservatory and the student will be here playing our piano," Trainor explains. "When the teacher plays something, it will actually play on our piano, and when the student plays something, it will play on the piano in Toronto."

The LIVElab is open for rentals and Trainor hopes the facility will host many more concerts in the future. She's also expecting a lot of corporate interest — it could be used to help develop better hearing aids, for example, or the perfect elevator music.

All of which could help finance its operating costs for the research going on there, some of which could make life a little easier for some people in very direct ways.

"We can study how Parkinson's patients change their movements while listening to music," Trainor says. "There's a fair bit of evidence that people with Parkinson's can walk better after listening to certain rhythms."

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