Receptive to Music

Pregnant women respond to music with particularly strong changes in blood pressure

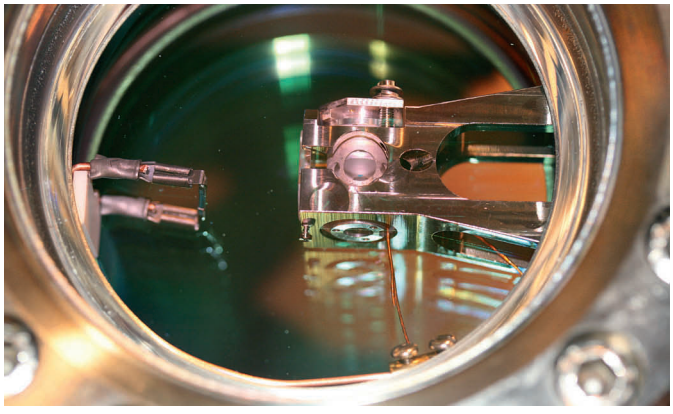
Music can be soothing or stirring, it can inspire us to dance or make us feel sad. It also triggers powerful physiological reactions in pregnant women. Scientists at the Max Planck Institute for Human Cognitive and Brain Sciences have discovered that music causes significant changes in blood pressure during pregnancy – despite being rated as similarly pleasant or unpleasant by pregnant women and their non-pregnant counterparts. The researchers' experiments showed that dissonant music played forwards caused blood pressure to drop significantly, while dissonant music played backwards resulted in higher blood pressure after ten seconds and a lower reading after thirty seconds. Unpleasant music thus doesn't generally increase blood pressure like other stress factors. The body's response is just as dynamic as the music itself. Music appears to have a special status among the sensory perceptions, as women's responses to most sensory perceptions are weaker during pregnancy. It is thus possible that the embryo may already be conditioned to music in the womb.
(Psychophysiology, May 19, 2014)

Music is moving: During pregnancy, the female body's response to music is much stronger.

Computing with a Quantum Trick

With a special gate, Max Planck physicists have developed an essential logic element for quantum computers

You can count on quantum information in the future. Physicists from the Max Planck Institute of Quantum Optics in Garching have developed an innovative quantum gate, an essential component of a quantum computer. Such a computer may be able to perform certain tasks far faster in the future than a standard computer. As a key element of their quantum gate, the Max Planck physicists use an atom trapped between two mirrors of a resonator. This allows them to switch the state of the photon by reflecting it off the resonator depending on the state of the atom. Moreover, this gate operation can entangle the atom with the photon. When quantum particles are entangled, their properties become interdependent. Entanglement opens up an array of new concepts in information processing. The quantum gate now presented by the Garching-based physicists makes it possible to design quantum networks in which information is transferred in the form of photons between several quantum processors that compute with atoms. (Nature, April 10, 2014)



Capturing atoms and photons: Two glass mirrors in the shape of truncated cones are assembled in the stainless steel clasp. One can be seen in this image to the right of center. The Max Planck researchers capture individual atoms between the mirrors. The laser pulses stream into the vacuum chamber through the glass window.

Model photo: Colourbox.de (top), Stephan Ritter – MPI of Quantum Optics