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On the use of a corrugated ceiling for noise reduction in rooms

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In certain halls the acoustics is dominated by distinct frequencies having disturbingly high intensities caused by yelling children, such as in an indoor swimming pool, or by industrial production processes. The use of damping materials to cover the ceiling, floor and side walls is not always permitted because of esthetic reasons or because of safety grounds or even humidity. The current study shows that in those cases the use of a corrugated surface is possible and is actually more effective in filtering out very distinct frequencies. An example is presented for frequencies at 3 to 4 kHz and numerical results are obtained in support of the use of a corrugated structure rather than classic damping materials such as baffles.