

矢量水听器的芯片级减震结构的设计

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摘要：

在MEMS矢量水听器现有结构的基础上，设计出一种新型弹簧减震结构，期望利用该结构提高水听器抗噪能力。根据ansys有限元仿真，确定出该弹簧的几何尺寸、劲度系数（ k ）及弹簧的所在位置——弹簧设置为内外圈相互垂直的两对。仿真结果表明，该减震结构抑制流噪声能力可提高3倍以上，同时几乎不影响水听器的接收灵敏度。该芯片级弹簧减震结构具有一次集成、一致性好、易于组阵、工程应用方便等特点。

关键词：矢量水听器；减震；ansys；弹簧；劲度系数

The design of a vector hydrophone' s chip-level damping structure

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Abstract:

A novel damping spring structure is designed based on the existing structure of MEMS vector hydrophone. It is desirable that this novel structure can improve the antinoise ability of hydrophone. According to finite element simulation by Ansys, the geometry, stiffness and location of the spring are determined. Two pairs of spring are adopted and placed inside and outside vertically. Simulation results show that the reducing flow noise ability of this damping structure can be increased by 3 times, as well as it does not affect the sensitivity of hydrophone. The advantages of this chip-level spring damping structure are one integrated, good consistency and engineering applications.

Keywords: Vector hydrophone; damping; ansys; spring; coefficient of stiffness

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