imparts push-pull coupling of the vibration systems as the mode with the lowest frequency, and the anchor structure is configured as a single connection point lying in the center of the spring structure, or the anchor structure includes two anchors which are arranged on a line on which the connections of the spring structure with the vibration systems are arranged.

A closed spring structure, i.e., an essentially linear, deformable structure that has no open ends (and can therefore be topologically deformed into a circle), to which only two vibration systems are connected, performs vibration, in which the two vibration systems are guided in common mode, as the lowest vibration mode, i.e., as the mode with the lowest vibration frequency. This vibration mode is suppressed if the spring structure is connected to the substrate via two points, the connecting line of which is perpendicular to the vibration direction of the vibration systems or the connecting line of which is between the connections of the spring structure to the vibration systems. This connection ensures that at least the same amount of energy must be used for displacement of the two vibration systems in the same direction as for displacement in the opposite direction. By designing the anchor(s) of the spring structure within the spring structure, this can be achieved in a space-saving manner.

The spring structure can be configured symmetrically at least with respect to two axes of symmetry that are perpendicular to each other. The two vibration systems can be connected to the spring structure along the first axis of symmetry, and the two connections of the spring structure to the anchor structure can lie along the second axis of symmetry. The symmetrical design of the spring structure makes it easier to determine possible deflections, i.e., the eigenmodes and their excitation energies. In addition, equal forces on the two vibration systems lead to equal deflections if the spring structure is configured symmetrically.

In so doing, the spring structure can deform in the opposite direction to the same extent along the second axis of symmetry when deformed along the first axis of symmetry. This means that a deflection of the vibration systems by a certain amount leads to a deformation of the spring structure along the first axis of symmetry, which is accompanied by a deformation of the spring structure along the second axis of symmetry, the deflection of which is in relation to the amount of deflection of the vibration systems (e.g., proportional or equal to it). This deformation makes coupling to the push-pull mode "softer" than coupling to the common mode, i.e., the spring

**Claims**

1. A coupling device for coupling two vibration systems, which are mounted above a substrate such that the vibration systems are linearly arranged along a first direction and can vibrate along the first direction, including:

a closed spring structure, which can be connected to the vibration systems on outer faces opposite each other along the first direction;

an anchor structure, which is rigidly connected to the substrate and which is arranged within the closed spring structure and is connected to the spring structure on two inner faces opposite each other along a second direction that is orthogonal to the first direction; wherein

the coupling device connected to the vibration systems imparts push-pull coupling of the vibration systems as the mode with the lowest frequency; and

the anchor structure is configured as a single connection point lying in the center of the spring structure, or

the anchor structure includes two anchors which are arranged on a line on which the connections of the spring structure with the vibration systems are arranged.

2. The coupling device according to claim 1, wherein

the spring structure is configured symmetrically at least with respect to two axes of symmetry that are perpendicular to each other;

the two vibration systems can be connected to the spring structure along the first axis of symmetry; and

the two connections of the spring structure to the anchor structure lie along the second axis of symmetry.

3. The coupling device according to claim 2, wherein

the spring structure deforms in the opposite direction to the same extent along the second axis of symmetry when deformed along the first axis of symmetry.

4. The coupling device according to any one of the preceding claims, further comprising:

first spring elements which connect the anchor structure to the spring structure; wherein

the first spring elements can essentially only be deflected along the second direction.

5. The coupling device according to any one of the preceding claims, further comprising:

second spring elements via which the vibration systems can be connected to the spring structure; wherein

the second spring elements can essentially only be deflected along the first direction.

6. The coupling device according to any one of the preceding claims, wherein

the spring structure is configured in a circular, rectangular, square, hexagonal, elliptical or diamond-shaped manner.

7. The coupling device according to claim 6, wherein

the spring structure is configured in a rectangular, square or hexagonal manner, and the connections to the two vibration systems and to the anchor structure are designed on the sides of the rectangle, the square or the hexagon, respectively; or

the spring structure is configured in a square, diamond-shaped or hexagonal manner, and the connections to the two vibration systems and to the anchor structure are configured in the corners of the square, the diamond or the hexagon, respectively.

8. A micro-electro-mechanical component, including:

the coupling device according to any one of the preceding claims; and

the two vibration systems which are connected to the spring structure of the coupling device.