

# Contents

|          |                                                 |          |
|----------|-------------------------------------------------|----------|
| <b>1</b> | <b>Introduction</b>                             | <b>1</b> |
| 1.1      | Damping materials . . . . .                     | 2        |
| <b>2</b> | <b>Apparatuses</b>                              | <b>2</b> |
| 2.1      | Biot's theory for porous absorbing materials    | 2        |
| 2.2      | Ultrasound in relation to structural parameters | 2        |
| 2.3      | Acoustic Biot parameters . . . . .              | 3        |
| 2.4      | Structural parameters . . . . .                 | 3        |
| 2.5      | Damping materials . . . . .                     | 4        |
| <b>3</b> | <b>Current measurement techniques</b>           | <b>5</b> |
| <b>4</b> | <b>Theory of a new measurement system</b>       | <b>5</b> |
| 4.1      | General . . . . .                               | 5        |
| 4.2      | Investigations of the test rig . . . . .        | 6        |
| <b>5</b> | <b>Measurement hardware</b>                     | <b>6</b> |
| <b>6</b> | <b>Construction of the test rig</b>             | <b>6</b> |
| 6.1      | Holders . . . . .                               | 6        |
| 6.2      | Measurement chamber . . . . .                   | 7        |
| 6.3      | Conditioning of specimens . . . . .             | 7        |
| <b>7</b> | <b>Summary</b>                                  | <b>8</b> |
|          | <b>References</b>                               | <b>9</b> |