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# Introductory Chapter: Is Noise Really Important? Should It Be Controlled?

*Marco Caniato and Federica Bettarello*

## 1. Introduction

Is noise really important? This is a very challenging scientific question. There are several literature works dealing with noise and its control. Anyway, why this physic phenomenon is so important for humans and specifically for scientists?

In years, researchers all over the world explored the entire acoustics field. If one writes “noise” on Google Scholar, almost 6 million results appear. This means that this parameter, this presence in our lives is of paramount interest and clearly occupies our minds and our thoughts.

Everybody knows that sound is a wave propagation in a dense mean. However, this is the academic definition. Aside of it, the perception is what makes the difference. And clearly what changes between *sound* and *noise*. The physics is the same, but sound is something positive such as music one likes or the voice of a beloved person. Noise is something disturbing such as industrial noise and traffic noise.

For these reasons, perception is what drives the research, rather than the physic phenomenon per se. Human perception varies from individual to individual. It is rather different, but some common trends are possible to find in literature. Thus, in the noise history, standards, scientific proposals, and law requirements were published, discussed, and imposed with the sole aim to control noise emission.

From what above reported, it is clear that the control of noise is needed for human purposes, for comfort reasons, and finally (and more importantly), for health issues and safety.

## 2. Noise control in literature

Literature is full of excellent works related to noise control. When one looks more in depth, some useful pieces of information can be derived. In order to do so, it is useful to picture the connection between the several different topics related to the “noise control” one.

When referring to **Figure 1**, it is possible to see that seven principal areas are related to the keyword “noise control,” namely (in order of numerical importance given by literature papers):

1. noise related to electronic devices





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