

## **ACOUSTICS2008/3290**

### **3D noise map of an hospital and noise sources evaluation**

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This paper presents the tri-dimensional acoustical characterization of Castelo Branco Hospital. Traffic and air conditioning machines produce noise that influences the Hospital and the buildings nearby. The results are presented in two dimensions at a height of four meters above the ground and in the vertical direction to access the noise levels in the building floors.

For the construction of the model were used and compared to types of measurements of vehicles counting, for characterization of the traffic noise. The first approach was performed at every hour during the 24 hours of the day, by counting periods of 10 minutes. In the second approach counting was performed for 30 minutes on six time intervals, identified by inquiries to the nearby population and by a 24 hour noise measurement. The air conditioning machines were modelled using the Portuguese norm, NP EN ISO 3744.

Correlation results taken from the two previous approaches and the noise measurements used to validate the Cadna/A model showed values of 0.87 and 0.85. Since they are very similar, one can conclude that both approaches can be used in practice. Taking the economical factor, the second approach is preferable because it takes less time to be performed.