



Experimental GPR resolution in concrete analysis

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Resolution is an important parameter in order to know the capability of the method to detect anomalies and to discriminate between different elements. In concrete studies it is very important the horizontal resolution to determine the exact position of reinforced bars. Usually, two very jointed elements, separated a distance lesser than the resolution capability, are detected as a single anomaly. On the other cases, interferences and coupling signals between the two reflections are also produced.

In order to obtain the horizontal resolution of a 1.6 GHz antenna, several experimental measurements were carried out. Firstly, measurements were performed on sand, where steel bars were buried. The bars separation was increased progressively from 2 cm to 30 cm. The aim of this experience was to determine the bars separation for which two different and clearly separated anomalies in the radar data are obtained. Secondly, those measurements were carried out in other media.

Several ways to improve the horizontal resolution capability were analysed: changes in the radar data acquisition settings and physical elements to focalize the lobes of the radiation pattern.