



DOCTORATS  
INDUSTRIALS

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DOCTORATS  
INDUSTRIALS

# PROJECTE DE DOCTORAT INDUSTRIAL EXPEDIENT 2016 DI 020

## DADES DE L'EMPRESA I DE L'ENTORN ACADÈMIC

### **Títol del projecte**

Anàlisi, disseny i fabricació de radars per a radars d'automoció

### **Empresa**

ZANINI AUTO GRUP S.A.

### **Responsable de l'empresa**

August Mayer Pujades

### **Universitat**

Universitat Politècnica de Catalunya

### **Director/a de tesi**

Jordi Romeu Robert

### **Treballador/a de l'empresa i doctorand/a**

Santiago Buitrago Ventura

## BREU DESCRIPCIÓ DEL PROJECTE DE RECERCA

Anti-collision automobile radars are becoming an increasingly common feature in cars. Present systems operate in the 77 GHz band with a forecast to increase the frequency of operation above the 90 GHz. The safety benefits of this technology are undubious, but for car manufacturers it is a challenge to integrate the radar without degrading its performance and keeping the vehicle aesthetics.

The solution is to design radomes that allow to conceal the radar, keep the car styling and do not degrade the radar performance. All this with the additional requirement that the solution has to be valid for mass production.

The specific tasks to be developed during the Ph. D are:

- Material characterization techniques at millimeter wave frequencies.
- Application of conformal optics approach for the optimization of radomes.
- Use of metamaterials in radome design.
- Analysis of the effect of manufacturing errors.
- Development of measuring techniques for radome characterization.

The candidate should have a background in electromagnetics, experience in the use of lab equipment at microwave frequencies (automatic network analysis), a knowledge of electromagnetic simulation software such as HFSS, CST Studio or FEKO.



Generalitat de Catalunya  
Departament d'Empresa i Coneixement  
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