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## Air-To-Ground Cellular Communication System

### Airbus Defence & Space Getafe

Functional area	Avionics Department – Radio Systems (TEAYA-TL6)
Interest Group	Student
Contract type / Working time	Internship
Work Experience	No work experience

#### Description of the job

Currently the aircraft communications are based on SATCOM or HF, V/UHF communication. However other means of communications are needed due to the high data rate user demand and new technologies. The use of advanced communication techniques implies the possibility of increase the data rate with a low cost for the final user. There is a need of new A2G (Air-To-Ground) communication system requiring high speed data rate, low cost for the customer, low weight and low cost solution, high reliability and easily scalable and upgradeable.

The scope of project is to study and simulate the algorithms needed to perform a communication system (including the use of multiple antennas) between the aircraft and ground of 4G/5G cellular communications, in order to be afterwards implemented on-board.

#### TFM Content

The Trabajo de Fin de Master will meet the followings:

- Market survey to research the state of the art in 4G/5G A2G Communications.
- Analysis of communication system possibilities and scenarios.
- Design of algorithms to allow the proposed A2G cellular communication system
- Simulation in MATLAB of algorithm and scenarios of the new communication system with multiple antennas.
- Design and simulate of the environment for system testing (optional, depending on the project advance).
- Development of a demonstrator in a Software-Defined Radio platform with the algorithms designed (optional, depending on the project advance).

#### Required Skills

- General knowledge in radiocommunications systems.
- Knowledge in antennas (desirable in beamforming and MIMO techniques)
- Knowledge in mobile communications (4G).
- MATLAB programming skills for simulation purposes.
- Analytical and problem-solving skills.
- Programming skills for SDR implementation (desirable).

#### Conditions

- 40 hours per week
- 1000 € gross per month
- Duration: 1 year

If you are interested, please contact Carlos Gómez: [carlos.gomez-calero@airbus.com](mailto:carlos.gomez-calero@airbus.com)



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