

Electromagnetic radiation and antennas



Component

École Nationale
Supérieure
d'Électrotechnique
d'Électronique
d'Informatique
d'Hydraulique
et des
Télécommunications

In brief

- **Code:** N8EE26A
- **Open to exchange students:** Yes

Presentation

Objectives

Understand the physical origin of electromagnetic radiation – Know how to calculate and physically interpret the electromagnetic field radiated by a harmonic electrical current distribution

- Understand, know how to calculate and know how to manipulate the fundamental descriptors of antennas
- Understand the fundamental properties of wire antennas
- Know how to formulate and physically interpret link balances involving a transmitting antenna and a receiving antenna

Description

- I- Electromagnetic field radiated by a harmonic electrical current distribution
- II- Power radiated by a harmonic electrical current distribution
- III- Concept of electromagnetic radiation intensity
- IV- Fundamental descriptors of antennas
 - IV-1- Directivity (radiation pattern, main lobe, blind directions, 3dB opening angle, side lobe level, E and H planes)
 - IV-2- Input impedance
 - IV-3- Efficiency

- IV-4- Gain
 - IV-5- Polarisation
 - IV-6- Effective area
 - IV-7- Bandwidth
 - IV-8- Phase centre
 - V- Link budget (Friis equation)
 - VI- Prospects in the field of antennas and related technologies
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Pre-requisites

The subject 'Guided and free space propagation' (Apogée code N7EE09A1)