



Departamento de Ingeniería de  
Comunicaciones

## CONFERENCIA

### Spherical Array in Room Acoustics

impartida por

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**Lugar: Sala de Grados B  
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**Contenido:**

Multi-channel spherical loudspeakers became popular for simulation of musical instruments in rooms. In this lecture a spherical source with a partial Gaussian distribution of 28 channels is presented. With sequential measurements and rotation of the sphere a radiation of effectively 23rd order of spherical harmonics is obtained, as long as the room acoustic conditions are time-invariant. In application of room acoustic auralization, this source can reproduce musical instruments, for example, or it can radiate directional Dirac functions (sound pointer) for detection and analysis of room reflections. Filter design and various applications are discussed as well as an approach for measurement of binaural room impulse responses reciprocally. In the latter example, the spherical loudspeaker acts as an HRTF radiator. For all applications in auralization, rotations of the source and the listener such as head orientation movements can be taken into account by multi-channel real-time convolution and dynamic filters. The theoretical background, the mechanical solution and the software components are discussed and evaluated with regard to challenges, performance, and limitations.