

SOURCE: INTEC-WAVES, Ghent University / imec, Belgium  
School of Environment and Society, Tokyo Institute  
of Technology, Japan

## **Modeling the Power Angular Profile of Dense Multipath Components using Multiple Clusters**

In this work, channel sounding data at 11 GHz in an indoor environment were processed and analyzed with multipath estimation frameworks. The Specular Multipath Components (SMC) were estimated with the SAGE algorithm, and the RiMAX algorithm was applied for the estimation of the Dense Multipath Components (DMC) in both the delay and the angular domain. By analyzing the Power Angular Profile (PAP) of the estimated DMC, it becomes apparent that this residual power is not uniformly distributed over the angular domain, and should be modeled by taking into account multiple angular clusters. We therefore propose to extend the maximum likelihood estimation of the angular DMC parameters in the RiMAX algorithm, in order to model the PAP of the DMC with a multimodal Von-Mises distribution. We also validate our proposed method with synthetic channel data, and present some preliminary results with measured channel sounding data.

Brecht Hanssens, Kentaro Saito, Emmeric Tanghe,  
Wout Joseph, and Jun-ichi Takada  
Technologiepark Zwijnaarde 15  
9052 Ghent  
Belgium  
Phone: +32 (0)9 331 49 18  
Fax: +32 (0)9 331 48 99  
Email: brecht.hanssens@ugent.be