

# International Conference and Exhibition on **Satellite**

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## **Mitigating the effects of rain-induced fading in Ka-band satellite video broadcast system using time diversity in concert with maximal ratio combining**

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Steadily-increasing user demand for a wide range of high-quality video services delivered via satellite has driven broadcasters to move into the higher frequency bands in order to accommodate the necessary data rates. However, a major issue at these frequencies is the effect of severe rain-induced fading on link reliability, which requires that the system must be designed to implement mitigation techniques in order to achieve an acceptable quality-of-service. These techniques generally involve the use of adaptive modulation and data rates, together with various forms of diversity, switching or combining. During the presentation, we analyse and quantify the benefits of adding i) time diversity (TD) and ii) maximal ratio combining (MRC) to the widely used DVB-S2 standard. Our results, which are based on combining a) 3 years of satellite beacon propagation measurements from 2 UK sites; b) high-fidelity computer simulations of the DVB-S2 standard for a typical satellite-broadcast communications link; and c) our new TD / MRC technology, indicate that substantial improvements in data throughput and significant reductions in outage time are readily achievable.

### **Biography**

Leshan Uggalla is a Doctoral Researcher in the area of satellite communications at University of South Wales, UK. His research interest focused on characterisation and prediction of propagation impairments on earth-space paths, design of Fade Mitigation Techniques for EHF satellite communication systems, design of satellite-integrated networks and similar areas. Also he is a qualified engineer with over 10 years of working experience in the telecommunication sector. This includes planning, installing and managing of a wide range of advanced telecom equipments.

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