Beam-edge Performance Improvement for Multi-beam Satellite Communication via Joint Downlink Transmission

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***Abstract*—In multi-beam satellite communication systems, all information is to the gateway stations that makes it easy to process joint transmission. This paper discusses two conditions that all receivers are in beam edge area or not. Full joint transmission is used when receivers are all in beam edge area and partly joint transmission is used when one of receivers are out of beam edge area. Then the simulation result shows that joint transmission improves the system performance, and when edge area radius is 0.3 times beam radius, the system performance is optimal.**

***Keyword*—Joint Transmission, Mobile Satellite Communication, Multi-beam**

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