

Institut Ruđer Bošković  
ZAVOD ZA TEORIJSKU FIZIKU  
Bijenička c. 54  
ZAGREB, HRVATSKA

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SEMINAR ZAVODA ZA TEORIJSKU FIZIKU

RBI-T-WINNING seminari



## Mueller-Navelet Jets at the LHC: Evidence for High-energy Resummation Effects

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Datum: četvrtak, 04. veljače 2016.

Vrijeme : **11 sati c.t.**

Mjesto: IRB, dvorana I krilo

### **Abstract:**

We study the production of two forward jets with a large interval of rapidity at hadron colliders, which was proposed by Mueller and Navelet as a possible test of the high energy dynamics of QCD, within a complete next-to-leading logarithm framework. We show that using the Brodsky-Lepage-Mackenzie procedure to fix the renormalization scale leads to a very good description of the recent CMS data at the LHC for the azimuthal correlations of the jets. We argue, based on the comparison of the lowest order non trivial corrections  $O(\alpha_s^3)$  to the cross section with predictions of an exact calculation, that the inclusion of next-to-leading order corrections to the jet vertex significantly reduces the importance of energy-momentum non-conservation which is inherent to the BFKL approach, for an asymmetric jet configuration. Finally, we argue that the double parton scattering contribution is negligible in the kinematics of actual CMS measurements.

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