

## Homotopy Algebras Seminar

### *Additivity and Formality for $E_n$ operads*

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**Abstract:** Let  $E_n$  be the little disks operad. It is well known that for  $n > 1$ , the rational homology of  $E_n$  is  $P_n$ , the  $(n-1)$  shifted Poisson operad. More generally, for all  $n$ ,  $E_n$  has a filtration whose associated graded operad is  $P_n$ . Dunn's additivity theorem states that the Boardman-Vogt tensor product of  $E_k$  and  $E_l$  is  $E_{k+l}$ . We will show that this equivalence is compatible with the filtration and, time permitting, explain the generalization of this statement to factorization algebras.

This fact has a number of remarkable consequences. An immediate corollary is the formality theorem for  $n > 2$  by induction starting with formality for  $E_2$ . Furthermore, the factorization algebra version of the result provides a local-to-global version of the BV-AKSZ formalism in quantum field theory, and sheds new light on the problem of quantization.

Friday, April 24 at 1:00 PM in SEO 1227
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