

# A Legendrian $A_\infty$ -Category For Contact Manifolds

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In this talk, I will explain the construction of an  $A_\infty$ -category  $\text{Aug}(Y, [\epsilon])$  associated to a pair  $(Y, [\epsilon])$  of a contact manifold and a homotopy class  $[\epsilon]$  of augmentation of  $Y$ . This work builds upon previous work on a similar category in  $\mathbb{R}^3$ , defined by Ng-Rutherford-Shende-Sivek-Zaslow.

The objects of this category are, roughly speaking, closed spin Legendrians admitting augmentations. The Hom spaces and  $A_\infty$ -operations are constructed using holomorphic curve data from the Chekanov-Eliashberg DGA.  $\text{Aug}(Y, [\epsilon])$  can be thought of as a positive version of the wrapped Fukaya category, which can be constructed with only the data of “fake” fillings, i.e. augmentations.

I will outline some applications of these categories and their many expected structural properties, most of which mirror the analogous properties for (partially) wrapped Fukaya categories.