Theo Johnson-Freyd SCGP, 3 Oct 2014

Poisson AKSZ theories

- Commutative homotopy BV algebras
  - ↪ recall definition: gca A, $\Delta: A \to A[\![\hbar]\!]$, axioms.
  - ↪ Jae Suk described motivation: these generalize perturbative ~~path~~ oscillating $\int$s.
  - ↪ Classical limit: com. ho. P_0 algebras.
  - ↪ Have been invented many times, inc
    - • Kravchenko '98 (Math)
    - • Batalin-Bering-Damgaard '96 (Physics)
  - ↪ How to find examples?
- Infinitesimal manifolds
  - ↪ diagrammatics for Taylor coeffs of geometric strs.
  - ↪ ~~B~~ chP_0 and $chBV$ are both $\partial(\text{generator}) = \text{quadratic}$.
  - ↪ operads: rooted trees :: dioperads: directed trees :: properads: ~~d~~ con. DAGs.
  - ↪ $chP_0 = \mathbb{D}^{di}(\text{Frob}_0)$
    $chBV = \mathbb{D}^{pr}(\text{Frob}_0)$.
  - ↪ Cor: ~~If~~ ~~...~~ a If $P \circlearrowright X$ and $\mathbb{D}^{pr} P \circlearrowright Y$, then $chBV \circlearrowright X \otimes Y$.
- Poisson AKSZ
  - ↪ Fields for $\underline{\text{Maps}}^{loc.}(M, X)$ are $\Omega^\bullet M \otimes X$.
  - ↪ $\forall M$, $\Omega^\bullet M$ is ~~D~~ ho. $\text{Frob}_{\dim(M)}$ $= \mathbb{D}^{di}$ ~~⊗~~ $chP_{\dim(M)}$. * Locality cond. *.
  - ↪ Quantization???