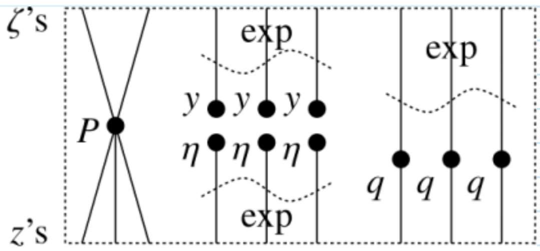
Nobody likes denominators

December 22, 2018 9:03 AM

(180629) The Zipping Thm (verification 2018-12). If P has a finite ζ-degree and $\tilde{q}$ is the inverse matrix of $1-q$: $(\delta^i_j - q^i_j)\tilde{q}^j_k = \delta^i_k$, then



$$\left\langle P(z_i,\zeta^j)\mathbb{e}^{c+\eta^i z_i + y_j\zeta^j + q^i_j z_i\zeta^j}\right\rangle = |\tilde{q}|\left\langle P(z_i,\zeta^j)\mathbb{e}^{c+\eta^i z_i}\Big|_{z_i\to\tilde{q}^k_i(z_k+y_k)}\right\rangle$$

$$= |\tilde{q}|\mathbb{e}^{c+\eta^i\tilde{q}^k_i y_k}\left\langle P\left(\tilde{q}^k_i(z_k+y_k), \zeta^j+\eta^i\tilde{q}^j_i\right)\right\rangle.$$

$$= |\tilde{q}|\, P\left(\frac{\partial}{\partial\eta^i}, \frac{\partial}{\partial y_j}\right) e^{c+\eta^i\tilde{q}^k_i y_k} \quad \Big\}\ \text{if } P \text{ also has finite } z\text{-degree.}$$

$$\mathbb{E}[w, L, \bar{Q}, P=\sum \bar{P}_k \epsilon^k] = \mathbb{E}\left[L, w^{-1}\bar{Q}, w^{-1}\sum \bar{P}_k \frac{\epsilon^k}{w^{4k}}\right]$$

$$= w^{-1} e^{L+w^{-1}\bar{Q}} \sum \bar{P}_k \frac{\epsilon^k}{w^{4k}}$$

* write conversion routines: $\mathbb{E}3$ & $\mathbb{E}4$
* Homotop everything to $\mathbb{E}4$ with conjugated LZip & QZip.
* Implement LZip & QZip at $\mathbb{E}4$ level, verify correctness.
* optimize @ $\mathbb{E}4$.