Discussion points for HLbL Lattice Session

- How to resolve the sign discrepancy for the disconnected contribution to $\pi_0 \to \gamma\gamma$

ETMC	The sign of the contribution has been checked independently by at least two people, but of course a confirmation bias can not be excluded. In our ongoing calculation of the eta/eta' TFF we are planning to revisit this issue.
RBC/UKQCD	Result checked with 4 independent codes/4 authors plus 1 automatic contractor ; Talk by Tom
Mainz	Talk by Antoine

- What is the focus of each group for the next few years

ETMC	- continuum limit of eta/eta' TFF and corresponding pole contribution - dedicated calculation of the $\pi_0 \to \gamma\gamma$ decay width - continuum limit of light-quark HLbL contribution at two fixed physical volumes
RBC/UKQCD	- finer, third lattice spacing - control statistics, continuum limit and FV systematics < 5% - low-mode averaging
BMWc	- improve the continuum limit of the direct HLbL calculation, with a fourth lattice spacing for the dominant light quark contribution

- Are the lattice artifacts in the charm-quark HLbL contributions sufficiently well under control? See talk by Simone
- Do we understand the mismatch between the pion-pole long-distance contribution and the data in the Mainz coordinate space method? (Some collaborations see a match, some do not.) See talk by Simone
- How is the RBC/UKQCD position-space pion pole contribution related to the dispersive approach?

$$\mathcal{F}_{\mu,\nu}(x,p) = \langle 0|TJ_\mu(x)J_\nu(0)|\pi^0(\vec{p})\rangle$$

$$= \int \frac{d^4q_1}{(2\pi)^4} e^{iq_1\cdot x} \frac{-i}{4\pi^2 F_\pi} \epsilon_{\mu,\nu,\rho,\sigma} q_{1\rho} q_{2\sigma} F_{\pi^0\gamma\gamma}(q_1^2, q_2^2) \qquad p = q_1 + q_2 \text{ and } p^2 = -m_\pi^2$$