Contribution ID: **127** Type: **Talk**

Determination of topological charge following several definitions

Monday, July 25, 2016 2:35 PM (20 minutes)

On the lattice, many definitions of the topological charge Q coexist, and can give very different numbers on a given configuration.
Those definitions will only converge when one takes the continuum limit of the moments $\langle Q^n \rangle$ (provided that Q has been correctly renormalised).
Additionally, other complications arise when one wants to study the mass dependence of the topological susceptibility, because of the mixing of the two operators under renormalisation. It is therefore unclear to which extent each definition of Q is compatible with each definition of the masses.
Here we will present the results of some tests following various choices of definition. In a second part, we will discuss the potential consequences of that ambiguity on the discarding of $m_u = 0$ as a solution to the strong CP problem.

Primary author: Dr FRISON, Julien (KEK Theory Center)

Co-authors: Dr YAMADA, Norikazu (KEK Theory Center); Prof. KITANO, Ryuichiro (KEK Theory Center)

Presenter: Dr FRISON, Julien (KEK Theory Center)

Session Classification: Theoretical Developments

Track Classification: Theoretical Developments