

ICTS String Seminar

- Title : Strongly coupled QFT dynamics via TQFT coupling
- Speaker : Mithat Unsal (North Carolina State University, USA)
- Date : Wednesday, 21 October 2020
- Time : 06:30 pm (IST)
- Abstract : We consider a class of quantum field theories and quantum mechanics, which we couple to topological QFTs, in order to classify non-perturbative effects in the original theory. The TQFT structure arises naturally from turning on a classical background field for a discrete global symmetry. In $SU(N)$ Yang-Mills theory coupled to TQFT, the non-perturbative expansion parameter is $\exp[-S_I/N]$ both in the semi-classical weak coupling domain and strong coupling domain, corresponding to a fractional topological charge and action configurations. To classify the non-perturbative effects in original $SU(N)$ theory, we must use $PSU(N)$ bundle and lift configurations (critical points at infinity) for which there is no obstruction back to $SU(N)$. These provide a refinement of instanton sums: integer topological charge, but crucially fractional action configurations contribute, providing a TQFT protected generalization of resurgent semiclassical expansion to strong coupling.

[ICTS virtual seminar](#) : Please register at <https://docs.google.com/forms/d/e/1FAIpQLSf0jLgoqiOgDnxbEBGiuIWjOmh9WX8caH-pr13qDBZOO91lmg/viewform>

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<https://www.youtube.com/channel/UCw9LdPQ5t7Q7muD0qzn70TA>