ICTS | INTERNATIONAL CENTRE for THEORETICAL SCIENCES

TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Synopsis Seminar

Title : On some aspects of Dijkgraaf-Witten theory for finite 2-groups

Speaker : Srikanth Pai B (ICTS-TIFR, Bengaluru)

Date : Thursday, 20th July 2023

Time : 11:00 AM (IST)

Abstract : Dijkgraaf-Witten's construction of a topological quantum field theory (DW TQFT) for finite gauge groups gives us connections between the representation theory of finite groups and manifold invariants. Just like groups arise as symmetries of sets, 2-groups arise as symmetries of categories. Topologically, finite 2-groups can be identified with based loop spaces of a connected homotopy 2-type with finite homotopy groups.

I will sketch the equivalence between the theory of double categories and their equivalence to the theory of fibrations (satisfying Segal conditions). I will propose a fibrational approach for the construction of a 2-group Dijkgraaf-Witten TQFT. A key result of the talk will be the universal property of the bicategory of classical fields that aids the construction of the underlying 2-functor of the quantization functor. We will also see some calculations of the partition function for low-dimensional cases that involve 2-group representations.

Venue : Emmy Noether Seminar Room & Online
Zoom link: https://icts-res-in.zoom.us/j/89716168097?pwd=Sk5SU09uNkVpVjVnNGtLcVdUU3dUZz09
Meeting ID: 897 1616 8097
Passcode: 202022