

NATIONAL CENTER FOR MATHEMATICS
ABDUS SALAM SCHOOL OF MATHEMATICAL
SCIENCES
G. C. UNIVERSITY, LAHORE

QUIVER GAUGE THEORIES, GRADED QUIVERS AND TORIC CALABI-YAUS

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Recently introduced graded quivers provide a unifying language for describing a large class of SUSY gauge theories in various even dimensions. A subclass of these theories dubbed toric theories have mesonic moduli spaces which are toric Calabi Yau.

The interactions of these theories are encoded in a graph embedded in torus of appropriate dimension called the periodic quiver. We will discuss some recent progress in understanding the map between periodic quivers and the corresponding Calabi

Yau. We will also present "3d printing" an algorithm for constructing lower dimensional theories from the data of higher dimensional ones or equivalently higher dimensional Calabi Yau from the data of lower dimensional ones. We will focus on going from 4 dimensional field theories to 2 dimensional ones but the generalization to other dimensions is straightforward.