Contribution ID: **53** Type: **Oral Presentation**

An RCMPS study of two coupled scalar QFT

We study a generalisation of ϕ_2^4 with self coupling constant g to two species coupled via the cross term $2\lambda\phi_1^2\phi_2^2$. The $\mathbb{Z}_2$ symmetry group of ϕ_2^4 is now generalised to the diherdral group D_4, apart from $g = \lambda$ line where the symmetry is enhanced to $O(2)$. In $1+1\,d$, spontaneous breaking of continuous symmetries is forbidden. Nonetheless, such systems can still undergo phase transitions of topological nature of BKT type as exemplified by compactified boson. Away from the $O(2)$ line, the model has a potentially rich phase diagram akin to the Ashkin-Teller model. We use the RCMPS ansatz to variationally optimise for the ground state and study the physics of this model.

Author: TIWANA, Karan (Ecoles des Mines, Paris)

Co-author: Mr TILLOY, Antoine (Ecoles des Mines, Paris)

Presenter: TIWANA, Karan (Ecoles des Mines, Paris)

Session Classification: B - Contributed Talk