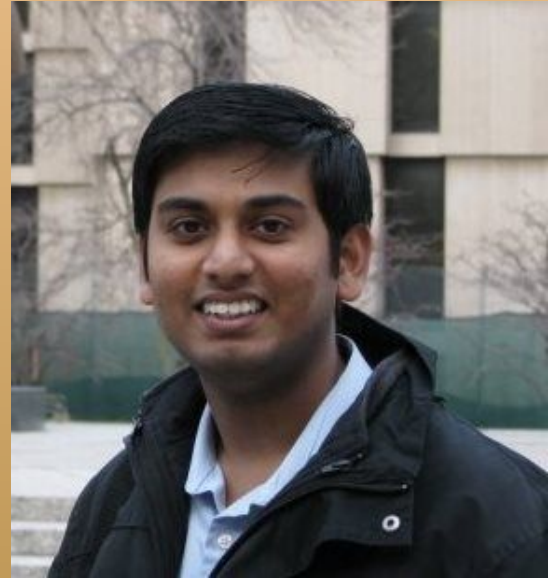


Recent progress in excited state modular Hamiltonians

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The zoom link will be sent separately.



We develop a perturbative understanding of the modular Hamiltonian for a CFT, divided into left and right half-spaces. For perturbations over a spacelike or null surface straddling the origin, the modular Hamiltonian picks up an endpoint contribution consisting of lightray operators and its moments. For perturbations over future or past wedges, we introduce a prescription for defining complex modular flow via analytic continuation to properly resolve singularities in the correlators involving the change in the modular Hamiltonian. We extract an operator expression for the modular Hamiltonian, which takes the form of a local operator in the future wedge plus contact terms with an unconventional singularity structure. Thanks to this structure the KMS conditions are satisfied, which independently establishes the validity of the results. We mention various future directions, including an all-orders speculation for the excited state modular Hamiltonian.