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Coupled channel scattering of vector and scalar charmonium resonances on the lattice

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Many exotic charmonium resonances have been identified recently in experiment, however their nature and properties are mostly unknown. Algorithmic and theoretical progress in lattice calculations has enabled reliable numerical investigation of the charmonium spectrum below the strong decay threshold, while the study of resonances remain an open challenge. The main difficulty to overcome is the presence of many open decay channels which are coupled together, resulting in a complex finite volume quantization condition. We report on our recent progress towards the determination of physical scattering parameters in the scalar and vector channel on CLS ensembles. We also present an update concerning the study of the charmonium spectrum in moving frames.

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