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8. Analysis

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Factor types of infrared representations of the XY-model

Continuously many mutually disjoint positive energy primary representations of type III_λ for each λ are constructed for the XY-model at critical parameter values. The method is to make excitations at an infinite number of mutually disjoint energy intervals with a finite energy sum. For a fixed sequence of energy intervals, the choice of the intervals to be excited or not to be excited gives continuously many disjoint representations, while the choice of a mixed excited state for each excited intervals gives rise to different ITPF-I factors. This construction is first made for CAR system and then transferred to the spin algebra by an operator algebra techniques.