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# Scalar Fields in 2D de Sitter Space

*Thursday, 19 December 2019 10:00 (30 minutes)*

Unlike higher dimensional de Sitter spaces, two dimensional de Sitter space is not simply connected. The behaviour of the fields on making a full rotation of the spatial direction must therefore be specified. Previously, Epstein and Moschella have shown that anti-periodic real scalar fields have no analogue of a Bunch-Davies vacuum state. For complex scalar fields, more general behaviour is possible. I will discuss complex scalar field theories in two dimensional de Sitter space and then comment on the existence of de Sitter invariant and Hadamard states for these theories.

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