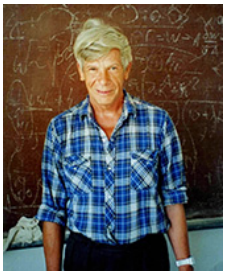

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Why does expectation value of stress energy tensor blow up near the event horizons?

Thursday, 13 October 2022 17:35 (25 minutes)

We consider a massive scalar field theory on static four-dimensional space-times with horizons. We study the near horizon behaviour of the quantum expectation values of the stress–energy tensor operator for the thermal states with arbitrary temperatures. It turns out that the dependence of the expectation values on the temperature and tensor structure of the stress–energy tensor are different from the usual ones in the Minkowski space-time. Moreover, for non–canonical temperatures these expectation values are divergent on the horizons. We also show that the Wightman functions have additional infrared peculiarities near the horizons.

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