Ergodicity and central limit theorems for stochastic wave equations in high dimensions

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This talk considers a stochastic wave equation in spatial dimensions higher than three. The driving noise is assumed to be a Gaussian noise that is white in time and has some spatial correlation. I will discuss the difficulties in considering high-dimensional stochastic wave equations and explain how to apply the Malliavin calculus tools to study the solution's ergodicity and fluctuations. Specifically, under some conditions for the spatial correlation of noise, we show that the solution process is ergodic under spatial shifts and that its spatial average converges to the standard normal distribution.