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Atomic physics and the cosmological 21 cm signal

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Upcoming low-frequency radio interferometers, such as MWA and SKA, offer the prospect of using 21 cm tomography to map the evolution of hydrogen reionization. The existence of a detectable signal is dependent upon the existence of a background of Lyman alpha photons able to decouple the 21 cm spin temperature from that of the CMB. In this talk, I will discuss the details of the relevant atomic physics and compare the results of simulations and analytical calculations of the effect of inhomogeneities in the Ly α and X-ray background on the 21 cm power spectrum.