Correlations of Riemann Zeta on the critical line

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Abstract: In this talk we will discuss the behaviour of the Riemann zeta on the critical line, and in particular, its correlations in various ranges. We will prove a new result for correlations of squares, where shifts may be up to size $T^{3/2-\varepsilon}$. We will also explain how this result relates to Motohashi's formula for the fourth moment, as well as the moments of moments of the Riemann Zeta and its maximum in short intervals.