AdS/CFT correspondence (Maldacena 1997)

II_B superstring on $AdS_5 \times S^5$ $\frac{R^2}{\alpha'} \int \frac{d\tau d\sigma}{4\pi} \left(\partial_a X^M \partial^a X_M + \partial_a Y^M \partial^a Y_M\right) + \ldots$	$\equiv$	$\mathcal{N} = 4$ D=4 $SU(N)$ SYM $\frac{2}{g_{YM}} \int d^4x \,\text{Tr}\left[-\frac{1}{4}F^2 - \frac{1}{2}(D\Phi)^2 + i\overline{\Psi}\not{D}\Psi + V\right]$

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Dictionary

Couplings: $\sqrt{\lambda} = \frac{R^2}{\alpha'}$, $g_s = \frac{\lambda}{N}$ String spectrum $E(\lambda)$ Minimal surface g_{ab}	strong$\leftrightarrow$weak	$\lambda = g^2_{YM}N$, N Anomalous dim $\Delta(\lambda)$ Scattering amplitudes=Wilson loops $\langle T_{\mu\nu}\rangle$ =hidro

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Plan of the school

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Jevicky: classical strings Balog: giant magnon Palla: symmetries	anomalous dimension planar: integrability Ahn: S-matrix $\rightarrow$ Bethe Ansatz	Hegedűs: gauge theory, magnon $\nearrow$

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Kormos	appl. to cond mat:	