## THE SCALING LIMIT OF THE HIGH-DIMENSIONAL ISING MODEL IS THE GAUSSIAN FREE FIELD

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In two independent papers, Aizenman and Fröhlich argued that every scaling limit of the critical Ising model in dimensions \$d>4\$ is trivial (or Gaussian). This qualitative result can be reformulated as follows: the Schwinger functions of any (reasonable) scaling limit satisfy Wick's law. This means that the scaling limit of the model's two-point function fully characterizes the limit. The lace expansion approach was successfully applied by Sakai to derive exact asymptotic of the model's two-point function in large enough dimensions. This leaves open a gap to fill to identify the scaling limit in the entire mean-field regime of the model. We use the so-called random current representation of the model, random walk arguments, and the Messager--Miracle-Solé inequalities to derive exact asymptotic of the critical two-point function in dimensions \$d>4\$, thus characterizing the scaling limit to be the Gaussian free field in this setting. Based on joint works with Hugo Duminil-Copin.