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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction -- Main results and strategy of proof -- Asymptotic expansion of ln ZN[V], the Schwinger-Dyson equation approach -- The Riemann–Hilbert approach to the inversion of SN -- The operators WN and U-1N -- Asymptotic analysis of integrals -- Several theorems and properties of use to the analysis -- Proof of Theorem 2.1.1 -- Properties of the N-dependent equilibrium measure -- The Gaussian potential -- Summary of symbols.
Sommario/riassunto	This book elaborates on the asymptotic behaviour, when N is large, of certain N-dimensional integrals which typically occur in random

matrices, or in 1+1 dimensional quantum integrable models solvable by the quantum separation of variables. The introduction presents the underpinning motivations for this problem, a historical overview, and a summary of the strategy, which is applicable in greater generality. The core aims at proving an expansion up to o(1) for the logarithm of the partition function of the sinh-model. This is achieved by a combination of potential theory and large deviation theory so as to grasp the leading asymptotics described by an equilibrium measure, the Riemann-Hilbert approach to truncated Wiener-Hopf in order to analyse the equilibrium measure, the Schwinger-Dyson equations and the boostrap method to finally obtain an expansion of correlation functions and the one of the partition function. This book is addressed to researchers working in random matrices, statistical physics or integrable systems, or interested in recent developments of asymptotic analysis in those fields.