Abstract Submitted
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Large N transfer matrix models of DNA melting VASSILI IVANOV, GIOVANNI ZOCCHI, UCLA, Department of Physics and Astronomy — We introduce a new parameterization of the Yeramian [1] transfer matrix in the Poland - Scheraga model of DNA melting. The transfer matrixes of our model correspond to the overlapping nearest neighbor dimers along the DNA. As a result base pairing and stacking can be explicitly treated as separate degrees of freedom, and the interplay between pairing and stacking mimics the geometrical constraints in the real molecule, which is different from the Zimm - Bragg parameterization used in the other papers. The model is exactly solvable in the homogeneous thermodynamic limit, and we calculate critical exponent and all observables without use of the grand partition function. As is well known, models of this class have a first order or continuous phase transition at the temperature of complete strand separation depending on the value of the exponent of the bubble entropy. [1] E. Yeramian, et al, Biopolymers **30**, 481 (1991).

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