

Special polynomials associated with the Painleve hierarchies

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The talk is devoted to the study of the special polynomials associated with the rational solutions of the two Painleve hierarchies. One of these hierarchies is the second Painleve hierarchy. Another hierarchy is obtained taking into account the self - similar solutions of the Kaup - Kupershmidt and Caudrey - Dodd - Gibbon hierarchies. Special polynomials associated with the rational solutions of the hierarchies are discussed. Two methods are used for finding the special polynomials. The base of the first method is the expansion of solution of the equation near infinity [1]. The second approach is application of the differential - difference equations [2]. These approaches allow us to search the special polynomials associated with the rational solutions of the hierarchies studied. The Hirota relations for the special polynomials are presented as well. Special polynomials are given. Relations between zeros of the special polynomials are found [3]. It is shown that rational solutions of hierarchies considered can be presented using the special polynomials. The rational solutions of the hierarchies are presented

References

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