

On the Drinfeld-Sokolov Hierarchies of D type

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We extend the notion of pseudo-differential operators that are used to represent the Gelfand-Dickey hierarchies, and obtain a similar representation for the full Drinfeld-Sokolov hierarchies of SD_n type. By using such pseudo-differential operators we introduce the tau functions of these bi-Hamiltonian hierarchies, and prove that these hierarchies are equivalent to the integrable hierarchies defined by Date-Jimbo-Kashiwara-Miwa and Kac-Wakimoto from the basic representation of the Kac-Moody algebra $SD_n^{(1)}$.

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