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On algebroid solutions of algebraic differential equations in the complex plane, II

Dedicated to Professor Kikuji Matsumoto on the occasion of his sixtieth birthday

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1. Introduction.

The main purpose of this paper is to investigate algebroid solutions of some algebraic differential equations in the complex plane with the aid of the Nevanlinna theory of meromorphic or algebroid functions. Throughout the paper the term "algebroid" or "meromorphic" will mean algebroid or meromorphic in the complex plane.

Let a_{jk} $(j=0, 1, \cdots, n; k=0, 1, \cdots, q_j)$ be entire functions without common zeros such that $a_{0q_0}\neq 0$ and $a_{nq_n}\neq 0$. We put

$$Q_j(w)=\sum_{k=0}^{q_j} a_{jk}w^k, \qquad q_j=\deg_w Q_j$$

$(j=0, 1, \cdots, n)$ and consider the differential equation

$$\sum_{j=0}^{n} Q_j(w)(w')^j=0 \tag{1}$$

under the condition

$$q_n+n>q_j+j \qquad (j=1, 2, \cdots, n-1). \tag{2}$$

We suppose that (1) is irreducible over the field of meromorphic functions and that it admits at least one nonconstant algebroid solution.

We say that a transcendental algebroid solution $w=w(z)$ of the differential equation (1) is admissible if it satisfies

$$T(r, a_{jk}/a_{nq_n})=S(r, w)$$

for all a_{jk}. For example, any transcendental algebroid solution of the differ-

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