Reconstruction of the values of algebraic function via polynomial Hermite–Pade m-system

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For an arbitrary tuple of $m+1$ analytic germs $[f_0, f_1, \dots, f_m]$ at some point x_0 we introduce the polynomial Hermite–Pade m-system. For each $n \in \mathbb{N}$ this system consists of m tuples of polynomials. These tuples are numerated by the number $k = 1, \dots, m$. The k-th tuple consists of $\binom{m+1}{k}$ polynomials, which are called "k-th polynomials of Hermite–Pade m-system" of order n. We show, that for the case, when the germs $f_j = f^j$, where f is a germ of some algebraic function of order $m+1$, the ratio of some k-th polynomials of Hermite–Pade m-system converges (as $n \to \infty$) to the sum of the values of f on first k sheets of so-called Nuttall partition of its Riemann surface into sheets.

Note that the well known Hermite–Pade polynomials of types 1 and 2 are m-th and 1-st polynomials of Hermite–Pade m-system, respectively.