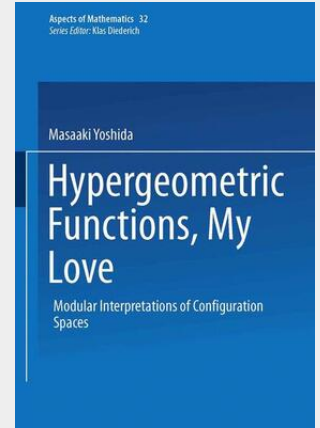Yoshida

Hypergeometric Functions, My Love

Modular Interpretations of Configuration Spaces

The classical story - of the hypergeometric functions, the configuration space of 4 points on the projective line, elliptic curves, elliptic modular functions and the theta functions - now evolves, in this book, to the story of hypergeometric funktions in 4 variables, the configuration space of 6 points in the projective plane, K3 surfaces, theta functions in 4 variables. This modern theory has been established by the author and his collaborators in the 1990's; further development to different aspects is expected. It leads the reader to a fascinating 4-dimensional world. The author tells the story casually and visually in a plain language, starting form elementary level such as equivalence relations, the exponential function,. Undergraduate students should be able to enjoy the text.

There are various interesting stories about the hypergeometric differential equation E(a, b, c): x(l - x)u" + {c - (a + b + l)x }u' - abu = D and its solution, the hypergeometric function. Among others, I love the following story: when (a, b, c) = (1/2,1/2,1), the ratio Ul(X): uz(x) of linearly independent solutions defines a multi-valued map D}, its monodromy group is f(2) = {g E SL(2, Z) 1 g == 12 mod 2}, the map

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