Hyperbolic Function Theory

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The aim of this talk is to consider the hyperbolic version of the standard Clifford analysis. The need for such a modification arises when one wants to make sure that the power function x^m is included. H. Leutwiler noticed in 1990 that the power function is the conjugate gradient of a harmonic function, defined with respect to the hyperbolic metric of the upper half space. The theory was extended to the total Clifford algebra valued functions called hypermonogenic in 2000 by H. Leutwiler and S.-L. Eriksson. Hypermonogenic functions have integral formulas, proved in 2004 and 2005. We present the kernel functions in term of hyperbolic metric. Using this new intepretation of the kernels we obtain power series presentations of hypermonogenic functions and related results.