



An approximate Herbrand's theorem and definable functions in metric structures

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We develop a version of Herbrand's theorem for continuous logic and use it to prove that definable functions in infinite-dimensional Hilbert spaces are piecewise approximable by affine functions. We obtain similar results for definable functions in Hilbert spaces expanded by a group of generic unitary operators and Hilbert spaces expanded by a generic subspace. We also show how Herbrand's theorem can be used to characterize definable functions in some absolutely ubiquitous structures from classical logic.

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