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Writing Mathematics in the Digital Age. Preliminary report.

Display of beautiful mathematics has long been possible thanks to Knuth's TeX. Display on the web has been a tricky proposition; doing so from the same document sources trickier still. But these are achievable and the situation is improving. Yet, the full potential of machine readable mathematics, for accessibility, computation, discovery, reuse and verification , is still elusive.

I will talk about the strategies we are developing in NIST's Digital Library of Mathematical Functions (http://dlmf.nist.gov/) project to go beyond mere presentation on the web towards human writable, machine readable mathematics. These include a collection of semantically oriented macros for special functions and mathematical concepts. Additionally, meta macros for defining semantic macros, as well as properties and relationships between objects are employed. Tools like LaTeXML go beyond LaTeX to convert the documents into machine readable formats for the web, such as XML and MathML. Finally, catalogs of mathematical concepts and special functions along with their characteristics and properties are essential for interoperability. (Received September 15, 2019)