ON A NON-LINEAR TOTAL DIFFERENTIAL EQUATION IN NORMED LINEAR SPACES.

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Introduction. The special functions of classical analysis derive much of their interest and importance from the properties of the numerical differential equations that characterize them. Since the publication of Fréchet's famous 1906 thesis (Palermo Rendiconti), an enormous amount of significant contributions have been made to the study of very general classes of functions in many general spaces — topological spaces, normed linear spaces, and many others — and the study of the spaces themselves has received a considerable amount of attention. Since the independent variables of the functions considered lie in function spaces and other infinitely dimensional spaces, and in other general spaces, it is clear that the special functions of general analysis could not in general, from their very nature, be characterized by ordinary numerical differential equations. It appears to the author that the characterization problem for special