

# Re: looking for Fréchet's 1906 Ph.D. dissertation introducing metric spaces

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- *From:* "Dave L. Renfro" <[renfrldl@xxxxxxxxxx](mailto:renfrldl@xxxxxxxxxx)>
  - *Date:* Tue, 05 Jun 2007 07:15:57 -0700
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Dan wrote:

Does anyone know of any online archives where I can find Maurice Fréchet's 1906 Ph.D. dissertation "Sur quelques points du calcul fonctionnel" ? It is supposed to be the first paper to introduce the concept of a metric space (even though the term "metric space" itself is due to Hausdorff).

I think that Fréchet's 1906 dissertation may have been published in the same year in the journal "Rendiconti del Circolo Matematico di Palermo", volume 22, pages 1-74. Does anyone know where I could find this version of Fréchet's work?

I have asked basically this same question about 3 weeks ago in another post. I hope I don't annoy anyone by asking the same question twice.

I don't believe this journal is on-line, at least not freely available. Most large U.S. state universities will have it, if you're in the U.S. However, assuming you can read French, you may find much of the motivation and approach difficult to follow, unless you have a good knowledge of the point set theory of the time. For example, limit points and closed sets and the Cantor-Bendixson theorem are central concepts, while the notion of an open set may not even appear. Also, much of the motivation springs from generalizing and organizing these notions that were then beginning to be applied to collections of curves and collections of functions, which Volterra and others had been introducing in their study of the calculus of variations and (what we now know as) the beginnings of functional analysis.

The following will be very useful if you want to

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study Frechet's thesis:

Angus E. Taylor, "A study of Maurice Fréchet I [II] {III}",  
Archive for History of Exact Sciences 27 (1982) [34 (1985)]  
{37 (1987)}, 233–295 [279–380] {25–76}.

Michael Bernkopf, "The development of function spaces with  
particular reference to their origins in the integral  
equation theory", Archive for History of Exact Sciences  
3 (1966), 1–96.

C. E. Aull and R. Lowen (editors), "Handbook of the  
History of General Topology", Kluwer Academic Publishers,  
3 volumes, 1997 & 1998 & 2001.

Dave L. Renfro

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