

BI-CO MATHEMATICS
COLLOQUIUM

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*Hamburger's Theorem and the
"Big Mac Theorem"*

Monday April 9, 2012

Talk at 4:00 p.m. – Park 328
Tea at 3:45 p.m. – Park 355, Math Lounge

Abstract:

In 1921, Hamburger proved that under certain auxiliary conditions, the Riemann zeta function is uniquely determined by its functional equation. Later, Hecke proved that the same conclusion holds, but under a different set of auxiliary conditions. By taking the weaker conditions of each version, Knopp and Ehrenpreis wanted to prove a stronger version Hamburger's theorem (the "Big Mac Theorem"). Instead, they were able to show that this new theorem fails in the largest way possible.

Proving any of these theorems requires the extensive use of a correspondence between modular forms (or modular integrals) and Dirichlet series with functional equations. In this talk I will discuss these correspondences and explain how they can be used to prove Hamburger's theorem and the spectacular failure of the "Big Mac Theorem."

BRYN MAWR COLLEGE