



THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

POSTDOCTORAL/GRADUATE STUDENT
SEMINAR SERIES ON L-FUNCTIONS

SPEAKER:

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On the Topic:

**A Leopoldt-type Result for Rings of Integers
of Cyclotomic Extensions**

Let p be a prime number and let m, r denote positive integers with $r \geq 1$ if $p \geq 3$ (resp. $r \geq 2$ if $p = 2$) and $m \geq 1$. We put $M = \mathbf{Q}(\zeta_{p^r})$, $N = \mathbf{Q}(\zeta_{p^{r+m}})$ and $\Gamma = \text{Gal}(N/M)$. We show that the associated order of N/M is the unique maximal order \mathcal{M} in the group ring $M\Gamma$ and that \mathcal{O}_N is a free, rank one module over \mathcal{M} . A generator of \mathcal{O}_N over \mathcal{M} is explicitly given. This result, together with Leopoldt's result for abelian extensions of \mathbf{Q} , implies that for any extension N/M of cyclotomic fields the ring of integers of N is a free rank one module over the associated order of N/M .

Wednesday, October 6, 1993

3:30 pm, Room 3018

at

The Fields Institute