

## **abstract**

SHORT TALKS BY POSTDOCTORAL MEMBERS

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

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Suppose we are given a finite subset  $E$  in an  $n$ -dimensional real space, and a real valued function  $f$  defined on  $E$ . How to extend  $f$  to a  $C^m$  smooth function  $F$ , defined on the entire  $\mathbb{R}^n$ , with  $C^m$  norm of the smallest possible order of magnitude?

We exhibit algorithms for constructing such an extension function  $F$ . Let  $N$  be the cardinality of the set  $E$ . Our algorithm starts with analyzing the data using  $C N \log N$  computer operations. Then, it is ready to answer queries: given any point  $x$  in  $\mathbb{R}^n$ , the algorithm returns the value  $F(x)$  using  $C \log N$  computer operations. Here  $C$  is a constant depending only on  $m$  and  $n$ . This is a joint work with C. Fefferman.