

ÉCOLE D'ÉTÉ « MÉCANIQUE STATISTIQUE DE NON-ÉQUILIBRE »
01–29 JUILLET 2011

SUMMER SCHOOL ON “NON-EQUILIBRIUM STATISTICAL MECHANICS”
JULY 01–29, 2011

The polaron

Elliott Lieb*

lieb@math.princeton.edu

A polaron is an electron surrounded by the electric field it generates by polarizing the surrounding atoms of an ionic crystal. It is both a physical model in condensed matter physics and a simple model of non-relativistic quantum field theory. Its study has been a field of research in mathematical physics for half a century, but there are still many unsolved problems left. Some of the rigorous results about this model, including some quite recent ones, will be reviewed.

*Department of Mathematics, Princeton University, Jadwin Hall, P.O. Box 708, Princeton, NJ 08542-0708, USA.