

147/2617
INSTITUT
FÜR METEOROLOGIE U. KLIMATOLOGIE
UNIVERSITÄT HANNOVER
HERRENHAUSER STR. 2 • 3000 HANNOVER 21

*Rainbows,
halos, and glories*

K

551.593.6

ROBERT GREENLER

Professor of Physics

University of Wisconsin - Milwaukee

CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE

LONDON NEW YORK NEW ROCHELLE

MELBOURNE SYDNEY

Contents

| | |
|---|----------------|
| <i>Preface</i> | <i>page ix</i> |
| 1 Rainbows | I |
| 2 Ice-crystal refraction effects: halos, arcs, and spots | 23 |
| 3 Ice-crystal reflection effects: pillars, circles, and crosses | 65 |
| 4 Complex displays, past and present | 105 |
| 5 Scattering: light in the sky and color in the clouds | 125 |
| 6 Diffraction: the corona, the glory, and the specter of the Brocken | 139 |
| 7 Atmospheric refraction: mirages, twinkling stars, and the green flash | 151 |
| Appendix: Answers to puzzles | 179 |
| <i>Notes</i> | 183 |
| <i>General references</i> | 187 |
| <i>Index</i> | 189 |