

# THE ANALYSIS OF EMISSION LINES

## A Meeting in Honour of the 70th Birthdays of D. E. Osterbrock & M. J. Seaton

Proceedings of the Space Telescope Science Institute Symposium,  
held in Baltimore, Maryland  
May 16–18, 1994

*Edited by*

ROBERT WILLIAMS  
*Space Telescope Science Institute, Baltimore, MD*

MARIO LIVIO  
*Space Telescope Science Institute, Baltimore, MD*

Published for the  
Space Telescope Science Institute



**CAMBRIDGE**  
UNIVERSITY PRESS

# Contents

<i>Participants</i>	vii
<i>Preface</i>	xi
<b>Emission Lines: Past and Future</b>	
<i>L. Woltjer</i> . . . . .	1
<b>Atomic Data for the Analysis of Emission Lines</b>	
<i>A. Pradhan and J. Peng</i> . . . . .	8
<b>Radiative Transfer</b>	
<i>D. Hummer</i> . . . . .	35
<b>Emission Lines from Winds</b>	
<i>J. Drew</i> . . . . .	49
<b>Photoionizing Shocks</b>	
<i>M. Dopita</i> . . . . .	65
<b>The Lexington Benchmarks for Numerical Simulations of Nebulae</b>	
<i>G. Ferland et al.</i> . . . . .	83
<b>Emission Line Diagnostics</b>	
<i>H. Netzer</i> . . . . .	97
<b>Ultraviolet Spectroscopy</b>	
<i>R. Dufour</i> . . . . .	107
<b>Infrared Emission Lines as Probes of Gaseous Nebulae</b>	
<i>H. Dinerstein</i> . . . . .	134
<b>Molecular Emission Line Diagnostics in Astrophysical Environments</b>	
<i>A. Dalgarno</i> . . . . .	158
<b>Abundance Determinations</b>	
<i>M. Peimbert</i> . . . . .	165
<b>Astrophysical Gamma Ray Emission Lines</b>	
<i>R. Ramaty and R. Lingenfelter</i> . . . . .	180
<b>Summary Remarks</b>	
<i>V. Trimble</i> . . . . .	214