

SECTION 1	
INTRODUCTION TO STABILITY AND BIFURCATION IN DYNAMICAL SYSTEMS AND FLUID DYNAMICS .....	1
SECTION 2	
THE CENTER MANIFOLD THEOREM .....	27
SECTION 2A	
SOME SPECTRAL THEORY .....	50
SECTION 2B	
THE POINCARÉ MAP .....	56
SECTION 3	
THE HOPF BIFURCATION THEOREM IN $R^2$ AND IN $R^n$ .....	63
SECTION 3A	
OTHER BIFURCATION THEOREMS .....	85
SECTION 3B	
MORE GENERAL CONDITIONS FOR STABILITY .....	91
SECTION 3C	
HOPF'S BIFURCATION THEOREM AND THE CENTER THEOREM OF LIAPUNOV by Dieter S. Schmidt .....	95
SECTION 4	
COMPUTATION OF THE STABILITY CONDITION .....	104
SECTION 4A	
HOW TO USE THE STABILITY FORMULA; AN ALGORITHM ...	131
SECTION 4B	
EXAMPLES .....	136
SECTION 4C	
HOPF BIFURCATION AND THE METHOD OF AVERAGING by S. Chow and J. Mallet-Paret .....	151

SECTION 5	
A TRANSLATION OF HOPF'S ORIGINAL PAPER by L. N. Howard and N. Kopell .....	163
SECTION 5A	
EDITORIAL COMMENTS by L. N. Howard and N. Kopell .....	194
SECTION 6	
THE HOPF BIFURCATION THEOREM FOR DIFFEOMORPHISMS .....	206
SECTION 6A	
THE CANONICAL FORM .....	219
SECTION 7	
BIFURCATIONS WITH SYMMETRY by Steve Schecter ....	224
SECTION 8	
BIFURCATION THEOREMS FOR PARTIAL DIFFERENTIAL EQUATIONS .....	250
SECTION 8A	
NOTES ON NONLINEAR SEMIGROUPS .....	258
SECTION 9	
BIFURCATION IN FLUID DYNAMICS AND THE PROBLEM OF TURBULENCE .....	285
SECTION 9A	
ON A PAPER OF G. IOOSS by G. Childs .....	304
SECTION 9B	
ON A PAPER OF KIRCHGÄSSNER AND KIELHÖFFER by O. Ruiz .....	315
SECTION 10	
BIFURCATION PHENOMENA IN POPULATION MODELS by G. Oster and J. Guckenheimer .....	327

## SECTION 11

A MATHEMATICAL MODEL OF TWO CELLS by S. Smale	....	354
---	------	-----

## SECTION 12

A STRANGE, STRANGE ATTRACTOR by J. Guckenheimer	..	368
---	----	-----

REFERENCES	.....	382
------------	-------	-----

INDEX	.....	405
-------	-------	-----