

(2)

REPORT DOCUMENTATION PAGE

AD-A220 274

TC

ELECTE

S

APR 10 1990

D

1b. RESTRICTIVE MARKINGS

3. DISTRIBUTION/AVAILABILITY OF REPORT

Approved for public release;
distribution unlimited.

2b. DECLASSIFICATION/DOWNGRADING SCHEDULE

4. PERFORMING ORGANIZATION REPORT NUMBER(S)

5. MONITORING ORGANIZATION REPORT NUMBER(S)

ARO 26288.1-MA-SOI

6a. NAME OF PERFORMING ORGANIZATION

A. Libgober

6b. OFFICE SYMBOL
(If applicable)

7a. NAME OF MONITORING ORGANIZATION

U. S. Army Research Office

6c. ADDRESS (City, State, and ZIP Code)

Department of Mathematics
University of Illinois at Chicago
Box 4348 M/C 249, Chicago, IL 60680

7b. ADDRESS (City, State, and ZIP Code)

P. O. Box 12211
Research Triangle Park, NC 27709-22118a. NAME OF FUNDING/SPONSORING
ORGANIZATION

U. S. Army Research Office

8b. OFFICE SYMBOL
(If applicable)

9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER

DAAL03-88-K-0134

8c. ADDRESS (City, State, and ZIP Code)

P. O. Box 12211
Research Triangle Park, NC 27709-2211

10. SOURCE OF FUNDING NUMBERS

PROGRAM
ELEMENT NO.PROJECT
NO.TASK
NO.WORK UNIT
ACCESSION NO.

11. TITLE (Include Security Classification)

"Topological Complexity of Algorithms"

12. PERSONAL AUTHOR(S)

A. Libgober

13a. TYPE OF REPORT

Final

13b. TIME COVERED

FROM 12/16/88 TO 12/15/89

14. DATE OF REPORT (Year, Month, Day)

03/12/90

15. PAGE COUNT

1

16. SUPPLEMENTARY NOTATION

The view, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.

17. COSATI CODES

FIELD

GROUP

SUB-GROUP

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)

Topological complexity, fundamental groups,
discriminants, (DD 473 only)

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

The research was directed toward understanding methods for calculating complexity of algorithms in non-classical sense. Topological complexity measures the necessity of branching in any possible algorithm for solving given problem. Particular problems which I considered are solving polynomial equations of special type (i.e. with several apriori vanishing coefficients). The difficulty is in the lack at the present time detailed information on geometry and topology of discriminants of the space of polynomial equations of the type in question. I was able to find the degrees of these discriminants and resolved questions of irreducibility. Topological complexity was found completely for trinomial equations.

Major steps was made toward investigating of algorithms for solving systems of 2 polynomial equations with 2 unknowns. I essentially calculated the fundamental group of the space of such system obtaining close relations to the Artin's braid group. Preliminary investigation was made in the meaning of topological complexity of solving differential equations. Key words.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT

☐ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS

21. ABSTRACT SECURITY CLASSIFICATION

Unclassified

22a. NAME OF RESPONSIBLE INDIVIDUAL

22b. TELEPHONE (Include Area Code)

22c. OFFICE SYMBOL

90 04 10 022

(over)

Accession For	
NTIS CRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

