Date: July 11, 1979

Project Title: Problems in Banach Spaces and Banach Algebras

Project No: G-37-617

Project Director: Dr. Israel Aharoni

Sponsor: National Science Foundation

Agreement Period: From 7/1/79 Until 12/31/80 (Grant Period)

Type Agreement: Grant No. MCS-7903322 dated 6/18/79

Amount: $7,200 NSF
2,177 GIT(G-37-326)
$9,377 TOTAL

Reports Required: Annual Progress Report(s); Final Project Report

Sponsor Contact Person(s):

Technical Matters
NSF Program Official
Dr. William G. Rosen
Program Director
Modern Analysis and Probability Program
Mathematical Sciences Section
Division of Mathematical and Computer Sciences
Directorate for Mathematical and Physical Sciences, and Engineering
National Science Foundation
Washington, D. C. 20550
202/632-7377

Contractual Matters
NSF Grants Official
Myra B. Galinn
MPE/STIA Branch
Division of Grants and Contracts
Directorate for Administration
National Science Foundation
Washington, D. C. 20550
202/632-5965

Defense Priority Rating: N/A

Assign to: Mathematics (School/Laboratory)

Copies To:
Project Director
Division Chief (EES)
School/Laboratory Director
Dean/Director--EES
Accounting Office
Procurement Office
Security Coordinator (OCA)
Reports Coordinator (OCA)

Library, Technical Reports Section
EES Information Office
EES Reports & Procedures
Project File (OCA)
Project Code (GTRI)
Other
Project Title: Problems in Banach Spaces and Banach Algebras

Project No: G-37-617

Project Director: Dr. Israel Aharoni

Sponsor: National Science Foundation

Effective Termination Date: 12/31/80

Clearance of Accounting Charges: 12/31/80

Grant/Contract Closeout Actions Remaining:

- Final Invoice and Closing Documents
- Final Fiscal Report Via FCTR
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other

Assigned to: Mathematics (School/Laboratory)

COPIES TO:

Administrative Coordinator
Research Property Management
Accounting Office
Procurement Office
Research Security Services
Research Reports Coordinator (OCA)

Legal Services (OCA)
Library, Technical Reports
EES Research Public Relations (2)
Project File (OCA)
Other: __________________________
# Project Title

Problems in Banach Spaces and Banach Algebras

The project concerned itself with the general problem of uniformly continuously embedding an infinite dimensional Banach space into bounded subset of a Hilbert space. This question is fundamental in the non-linear theory of the geometry of Banach spaces. The theory of positive definite functions was successfully brought to bear on the problem. Consequently a complete characterization of Banach spaces for which the embedding is possible was found.

### Publications

"Positive Definite Functions and Uniform Embeddings of Banach Spaces into Hilbert Spaces"

Israel Aharoni, Boris Mitjagin, and Bernard Maury to appear Israel Journal of Mathematics

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## PART II—SUMMARY OF COMPLETED PROJECT (FOR PUBLIC USE)

The project concerned itself with the general problem of uniformly continuously embedding an infinite dimensional Banach space into bounded subset of a Hilbert space. This question is fundamental in the non-linear theory of the geometry of Banach spaces. The theory of positive definite functions was successfully brought to bear on the problem. Consequently a complete characterization of Banach spaces for which the embedding is possible was found.

### Publications

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## PART III—TECHNICAL INFORMATION (FOR PROGRAM MANAGEMENT USES)

<table>
<thead>
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<th>ITEM (Check appropriate blocks)</th>
<th>NONE</th>
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<tr>
<th>Principal Investigator/Project Director Name (Typed)</th>
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<th>4. Date</th>
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Form 98A (5-78) Supersedes All Previous Editions