Annexure -III

UNIVERSITY GRANTS COMMISSION

BAHADUR SHAH ZAFAR MARG

NEW DELHI – 110 002.

Annual Report of the work done on the Minor Research Project.

(Report to be submitted within 6 weeks after completion of each year)

1. Project report No. 1st /2nd /3rd /Final :- **1st**

2. UGC Reference No. **:-** **F.No.47-1818/11(WRO) dated on 11/01/2012**

3. Period of report **:-** **10/04/2012 to 09/04/2013**

4. Title of research project :- **Study of some Integral Transforms, Generalised functions and Boehmians**

5. (a) Name of the Principal Investigator :- **Shri A.M.Mahajan**

(b) Deptt. and University/College where work has progressed :- **Walchand College of Arts and Science ,Solapur**

6. Effective date of starting of the project :- **10/04/2012**

7. Grant approved and expenditure incurred during the period of the report:

a. Total amount approved Rs. **1,50000/-**

b. Total expenditure Rs. **1,46765/-**

c. Report of the work done: (Please attach a separate sheet)

i) Brief objective of the project:-

1) To study some properties of integral transforms and extend these transforms to certain class of generalized functions .
2) To develop the theory of these transform in distributional sense .
3) Extend these generalized transform to Boehmians
4) Applications of these transforms to problems in heat conduction problem ,Engineering and Physics

I studied various integral transforms ,their properties , definitions , generalized functions and used the technique of A.H.Zemanian to extend them to certain class of generalized functions . Also I studied definitions and properties of boehmians space of some integral transforms.The idea of construction of boehmians was initiated by the concept of regular operators introduced by Boehme. Regular operators form a subalgebra of the field of Mikusinski operators and hence they include only such function whose support is bounded from left. In a concrete case the space of boehmians contains all regular operators all distributions and some objects which are neither operators nor distributions.The construction of boehmians is similar to the construction of field of quotients and in some cases it gives just the field of quotients. The theory of generalized functions ,distributions was introduced by Sobolev S.L. in 1936 and L. Schwartz in 1940. The concept of Boehmians was motivated by Mikusinski's operator and particularly by regular operators by T.K.Boehmi.

ii. Work done so far and results achieved and publications, if any, resulting from the work (Give details of the papers and names of the journals in which it has been published or accepted for publication :- Nil

iii. Has the progress been according to original plan of work and towards achieving the objective. if not, state reasons :- Review of the literature is completed and development of extension of Marchi Fasulo transform of Generalised functions is in progress.

iv. Please indicate the difficulties, if any, experienced in implementing the project

:- No difficulties.

v. If project has not been completed, please indicate the approximate time by which it is likely to be completed. A summary of the work done for the period (Annual basis) may please be sent to the Commission on a separate sheet :- **Copy Attached**

vi. If the project has been completed, please enclose a summary of the findings of the study. Two bound copies of the final report of work done may also be sent to the Commission :- **Not Applicable**

vii. Any other information which would help in evaluation of work done on the project. At the completion of the project, the first report should indicate the output, such as (a) Manpower trained (b) Ph. D. awarded (c) Publication of results(d)otherimpact,if any :- **No**

1) Participated in UGC Sponsored National Seminar on ' Recent Trends in Mathematics and its Application' January 21-22 , 2012 Organized by Department of Mathematics, CHANGU KANA THAKUR College New Panvel.
2) Participated in UGC Sponsored State level Conference on Mathematics for all Sciences (SCMAS – 2013) 20th and 21st December 2013 Organized by C.B. Khedgi's Basaveshwar Science, College Akkalkot.

PRINCIPAL INVESTIGATOR PRINCIPAL

Review of Literature :-

1.L.Schwartz defined the distributions,and its properties.

2.In (1968) A.H.Zemanian worked on several integral transforms .Firstly he extended the bilateral Laplace transform to certain class of generalized functions.

3.In 1968 Gel Fund and Shilov ,G.E.presented spaces of fundamental and Generalisd functions.

4.In 1992 Mikusinski P. and Nemzer D.developed the theory of the laplace transforms on a class of Boehmians.

5.In 1993 Howell K.B. studied the new theory for Fourier Analysis of basic multiplication on dual spaces.

6. In 1989 Pilipovic S. studied the asymptotic expansions of Schwartz's Distributions.

7. In 1969 Alan L.Schwartz developed the smoothness of Hankel Transform.