

King Khalid University



College of Science
Department of Mathematics



جامعة الملك خالد



كلية العلوم
قسم الرياضيات

Report on research activities in the Department of Mathematics Academic Year 1443H (2021-2022)





1. Introduction

It is well known that scientific research in mathematics field has an important impact on the actual technological development. In fact the field of mathematics is the principal source of different algorithms in machine learning, deep learning or artificial intelligence processing. In this context, the department of mathematics at King Khalid University is one of the most active departments in scientific research in mathematics at Kingdom of Saudi Arabia. The diversity competencies of the faculty members in the department permits to maintain this dynamics in scientific research. At this stage, many research projects have conducted by the members of the department. Moreover, all the expected outcomes of the projects are achieved on time. Furthermore, the faculty members of the mathematics department are split into four research groups that are: (1) Applied mathematics group, (2) Analysis and geometry group, (3) Algebra and number theory and their applications group and (4) Statistics and probability group. This partition proposed by the mathematics department council covers the principal axes of mathematics and its applications. Although the theoretical part of the mathematics science is primordial, the members of the mathematics department at King Khalid University have paid a special attention to the applicability of the mathematical models in practice. At this stage many potential contributions, for applied purpose. have been published by the faculty members of the department. The aim of this report is to give an overview on different research activities in the mathematics department for the academic year 1443H.

2. The scientific publication



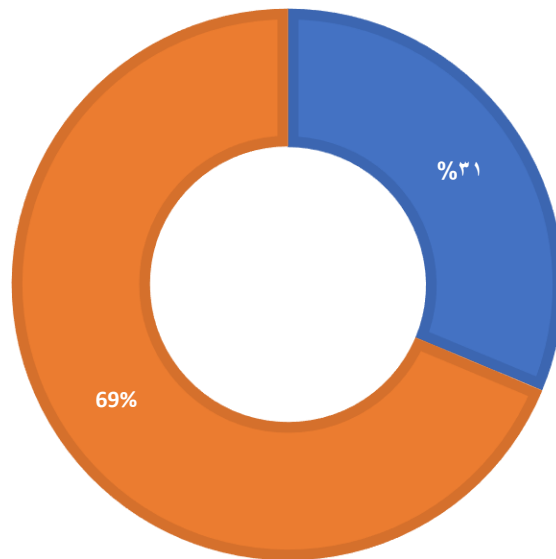
As mentioned in the introduction the research activity in the mathematics is organized through four research groups. Each group is administrated by a coordinator. The data of this report are collected primarily by the coordinator of the groups. In addition to the statistical survey conducted by the coordinator of the groups we have used the two popular academic platforms that are Google Scholar and the Web of Sciences. The two last platforms are used to identify the duplicate publications of the department. Clearly, this filtration step is important to ensure the credibility of the report. Recall that our principal aim in this report is to emphasize the contribution and the role of the department in scientific research activity in King Khalid university. Let's point out that the statistical analysis of this report is carried out during the period from September 2021 to July 2022. During this period, we count 405 scientific papers published by the member of the mathematics department. This number of publications increases the publication rate in the department by 13%. It was 5.76 by member in 1442H it reached 6.53 during the acadademic year 1443H. The observed amelioration is due to the augmentation of the number of publications which increased by 65% compared to the previous academic year. Furthermore, the number of published scientific papers by the mathematics department represents 31.29% of the total number of scientific publications realized in the college of sciences at King Khalid University. On the other hand, according to the web of science platform, there are 3090 scientific papers published by the faculty members of the King Khalid University. Thus, we can say that the proportion of the Department of Mathematics in the scientific publishing activity is about 13.10%. Compared to the previous academic year 1442H we observe that there is a substantial progression in this aspect. The contribution of the department was 11.12% in 1442H and it is now 13.10%. This statement highlights the principal role played by the mathematics department in the scientific researches activities in King Khalid University. The graphs (1-2) compare the



contribution of the mathematics department to the other departments in college of sciences as well as the university in general.

CONTRIBUTION OF MATHEMATICS DEPARTMENT COMPARED TO OTHER DEPARTMENTS IN THE COLLEGE OF SCIENCES

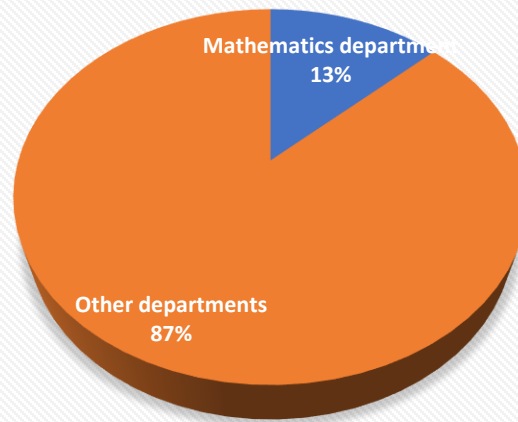
■ Mathematics department ■ Other departments



Figure(2): Contribution of mathematics department compared to other departments in the college of sciences



CONTRIBUTION OF MATHEMATICS DEPARTMENT COMPARED TO OTHER DEPARTMENTS IN THE KING KHALID UNIVERSITY



■ Mathematics department ■ Other departments

Figure(3): Contribution of mathematics department compared to other departments in the King Khalid University

In order to identify the contribution of each research group in the scientific publishing we present in the following table the number of published papers by research groups:

Research groups	Number of publications
Applied Mathematics	218
Analysis and geometric	99
Algebra and number theory and their applications	69
Statistics and probability	19
Total	405

Table(1): Number of publications by research groups



We observe that the group of Applied mathematics is the first group in term of number publications. This group has contributed by 218 papers, which represents 53% of the total number of published papers in the department. The group of Analysis and Geometry is placed in second position by 90 published papers. In the third place we found the research group of Algebra and Number Theory and their applications. The member of this group have published about 69 scientific papers. The number of publications realized by the Statistics and Probability group is 19 papers. It should be noted that the difference in group's contributions depends on several factors including the number of the faculty members of the research group or the number of scientific journals devoted to the topics of the group. However, in general we observe an equitability in the rate of publication between groups. For example, the publication rate in the research group of Statistics and Probability is 5.28 which is close to the global publication rate of the department.

3. The citation rate

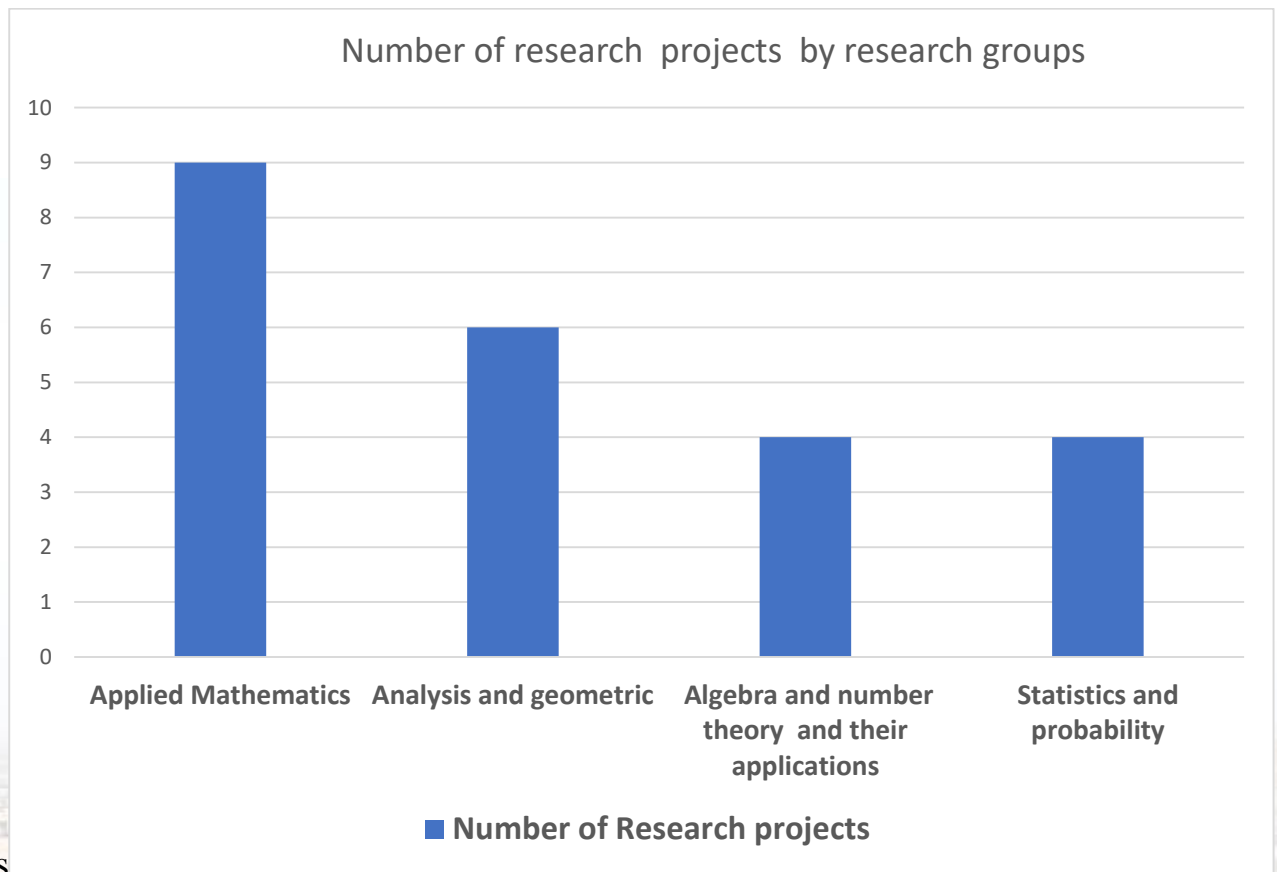
Of course the quality of the published papers is also important element of the department ranking. So, we focus in this paragraph on the quantification of the quality of the research activities in the department. To do that we analyze the citation rate of the published papers in the department. Specifically, we have used the Google Scholar platform and we have controlled the citations of the published paper during the academic year 1443H. We point out that the unified affiliation used by the members department is "Dept., King Khalid University, KSA.". By simple search in Google Scholar platform we totalize 31 researchers affiliated under "Dept., King Khalid University, KSA". Additionally, the number of citations correspond to the specified affiliation is 7301. Undoubtedly, this number of citations confirms the department's strategy on the scientific research. In particular, the mathematics department



encourages their members to publish their contributions in the scientific journals with higher impact factor.

4. Research project

Based on the statistical survey performed by the coordinators of the research groups during 1443H we counted 23 research projects, in the mathematics department, approved by the Deanship of Scientific Research at the King Khalid University. The distribution of the research projects follows the same order of the publishing process. The bar chart plotted in Figure (4) precisely the number of projects achieved by each group. More precisely, we can see clearly that the Applied Mathematics Group has achieved 9 research projects. While, the research group of Analysis and geometry has accomplished 6 projects. The faculty members affiliated in the group of Algebra and Number Theory and their applications have realized 4 projects. The same number of research projects was realized by the Statistics and probability research group.



members

Figure (4): Number of research projects by research groups

