

MEMORANDUM

TO: Library

FROM: Dr. Lotfi Gaafar
Dean of School of Sciences and Engineering

SUBJECT: Master of Science Thesis

DATE: September 22, 2022



Please find the attached signed copy of thesis submitted by Mahmoud Mohamed Rateb partial fulfillment of Master of Science in Physics Degree, which has satisfied the requirements of the Physics Department and is ready for binding and display in the library.

Name of student: Mahmoud Mohamed Rateb

Department: Physics Department

Advisor: Dr. Ahmed Hamed

Thesis title Particles in High Energy "simulated" Proton-Proton Collisions

CC. Candidate
Department Chair
Registrar
Dean of Graduate Studies

The American University in Cairo
School of Sciences and Engineering

“Azimuthal Anisotropy of Different Quark-flavored Particles in High Energy "simulated" Proton-Proton Collisions”

A Thesis Submitted by

Mahmoud Mohamed Rateb

To the

Physics Graduate Program

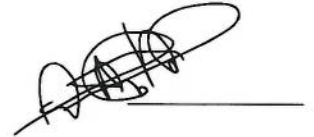
September 6th, 2022

In partial fulfillment of the requirements for the degree of

Master of Science in Physics

Has been approved by

Dr. Ahmed M. Hamed (Advisor)
Assistant Professor, Department of Physics
American University in Cairo



Dr. Mohammad Orabi (Internal Examiner)
Assistant Professor, Department of Physics
American University in Cairo

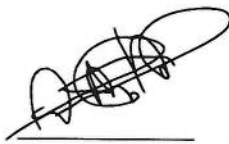
mohamed Orabi

Dr. Saskia Mioduszewski (External Examiner)
Professor, Department of Physics & Astronomy
Texas A&M University

Saskia Mioduszewski

Dr. Nageh Allam (Moderator)
Professor, Department of Physics
American University in Cairo

Nageh Allam



Graduate Program Director

09/06/22

Date

Janef

Dean

9/26/2022

Date



THE AMERICAN UNIVERSITY IN CAIRO
الجامعة الأمريكية بالقاهرة

Proof of IRB Approval or Waiver for Completed Graduate Thesis

To be submitted with completed thesis and other forms requested below

All research involving living human beings or bodily tissue samples requires advance approval from AUC's Institutional Review Board (IRB). Each student's thesis advisor is responsible for ensuring that this form is filled in accurately. Until this form is completed and approved, the thesis cannot be posted on DAR, and the student is not eligible to graduate. *Please attach to this form, a copy of the IRB approval letter, the abstract of the student's thesis and thesis copyright and availability form.*

Student Name: Mahmoud Mohamed Rateb

Email: rateb@aucegypt.edu

AUC ID # 900081259

Mobile # 01004100209

Department/Unit: Physics

School: School of Sciences and Engineering

Thesis Title: Azimuthal Anisotropy of Different Quark-flavored Particles in High Energy "simulated" Proton-Proton Collisions

Date: 07 September 2022

Name of Thesis Advisor: Dr. Ahmed Hamed

Thesis Advisor's Email: ahmed.mhamed@aucegypt.edu

The advisor should check one of the following boxes.

- IRB approval has already been obtained for this thesis. (Please attach a copy of the IRB approval letter.)
- IRB approval is not necessary for this thesis, since the research is not concerned with living human beings or bodily tissue samples.

Signature of Student: Mahmoud Rateb

Date: 07 September 2022

Signature of Thesis Advisor: 

Date: 09/07/22

Name and Signature of School Dean:

Lotfi Gaafar, Gaafar 9/26/2022

Date:

Step 1: Student to Department or Program which needs to submit to the Dean of the School:

- (1) The Proof of IRB Approval /Waiver together with a (2) copy of the IRB approval letter from IRB chair (3) thesis abstract and (4) the thesis copyright and availability form

Step 2: The Office of the Dean of the School needs to submit to the library:

The above four documents in addition to (5) the School Dean's memo (6) with the thesis final copy