DEPARTMENT OF PHYSICS

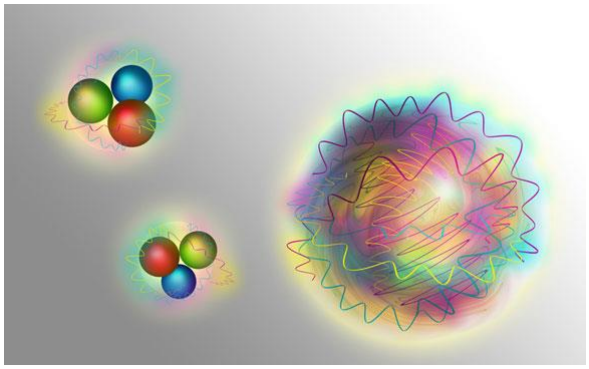
PROF. DR. ISMAIL RUHI UMAN

PhD in Physics, Ludwig Maximilian University, Germany, 2001

ismailruhi.uman@neu.edu.tr

Prof. Dr. İsmail Ruhi Uman is a particle physicist who had previously worked in leading international high energy physics laboratories. He has graduated from Department of Physics of University of Perugia, in Italy.

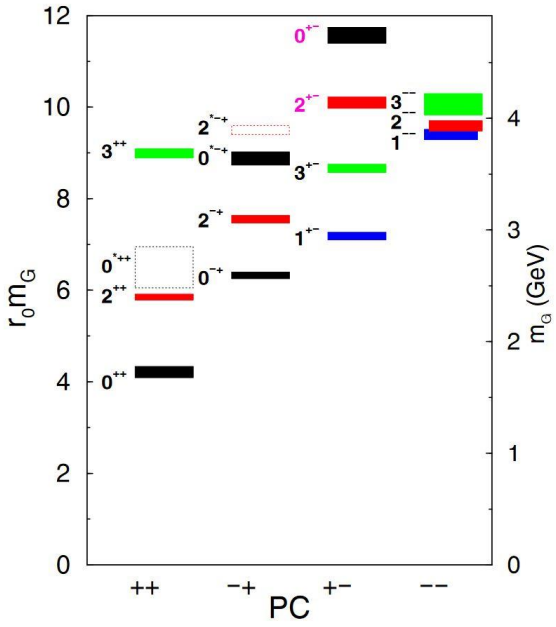
He has gained his first experience in the field of particle physics in the LVD experiment at the Italian Gran Sasso Laboratories (LNGS), which are the world's largest underground laboratories. He has conducted his studies on various physical phenomena, including stellar collapses, cosmic ray physics, neutrino oscillations and proton decay. In 1995 has been taking part in the Crystal Barrel experiment at CERN. Since than his main research activities is about hadron spectroscopy. The standard model of physics predicts the existence of bound states not only of quarks (meson and baryons) but also of two or three-gluons called *glueballs*, or their admixtures like *exotic hadrons* or *tetra-quarks*.



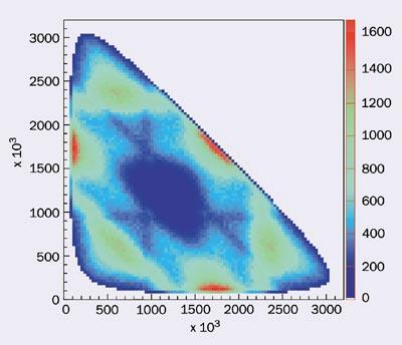
Nucleons consist (left) of quarks (matter particles) and gluons (force particles). A glueball (right) is made up purely of gluons.

He completed his doctorate study in particle physics in Ludwig Maximilian University in Munich, Germany, in 2001. With the data of the Crystal Barrel experiment he succeeded to observe for the first time the decay of f0(1710) meson to two kaons in proton-antiproton annihilations. In 2000 he moved to Chicago where he worked as a Research Associate at

Northwestern University in Evanston, Chicago and joined the E835 Fermilab collaboration. There he confirmed the observation of $f_0(1500)$ and $f_0(1710)$,as well as the observation of tensor mesons $f_2(2340)$, which is considered now a tensor glueball candidate. The results of the experimental observation of these glueball candidates are compared with the theoretical predictions of Lattice QCD. In order to do that Prof. Uman is performing Partial Wave Analysis (PWA) and Dalitz Plot analysis, which allows to determine not only the mass and the width of these resonances but also their spin and their quantum numbers J^{PC}.



Prediction of quenched LQCD by Morningstar et. al. Mesons with exotic quantum numbers are shown in magenta.



A Dalitz plot from the Crystal Barrel experiment, for $p\bar{p} \rightarrow 3\pi^0$. The axes are $m(\pi^0,\pi^0)$/(MeV)^2 for each pair of π^0mesons.

He moved back to CERN in 2004 where he took part of the COMPASS experiment. In this experiment he investigated the production of exotic states and glueballs in different physics processes, like diffractive scattering and central production. Then he moved back to Turkey to become Assistant Professor at Doğuş University in 2011 where he became Associate Professor in 2015. In Turkey he joined the international BESIII experiment which is located in the Institute of High Energy Physics (IHEP), in China. He finally moved to Near East University in 2016 where he become a Professor in physics in 2018.

ASSOCIATE PROF. DR. DILBER UZUN OZSAHIN

PhD in Physics, Universitat Autonoma de Barcelona, Spain, 2014

dilber.uzunozsahin@neu.edu.tr

Associate Prof. Dr. Dilber Uzun Ozsahin is graduated from the Department of the Physics in 2006 from Çukurova University. She has worked at CERN, Geneva during 2008-2010 for her Master thesis. She completed her Master studies in 2010 in Master of Natural and Applied Science, High Energy Physics. She completed her PhD studies on Medical Imaging for Breast Cancer in Universitat Autonoma de Barcelona, Spain, 2014.

Between 2015-2016, she worked at Gordon Center for Medical Imaging, NMMI Radiology Department, Massachusetts General Hospital & Harvard Medical School as a postdoctoral researcher. She has worked on a new technique called laser induced optical barriers (LIOB) technique to improve nuclear medicine imaging devices cost and performance.

Currently, she is working on the Mathematical Modelling and Artificial Intelligence Applications on Healthcare and Engineering. She has been affiliated at Near East University as an Assoc. Prof. for seven years and University of Sharjah for two years.

ASSOCIATE PROF. DR. ZALİHE TÜRKER

PhD in Physics, Anadolu University, Türkiye, 2013

zalihe.turker@neu.edu.tr

Assoc Prof. Dr. Zalihe TÜRKER is a theoretical physicist and graduated from Department of Physics in 2006 from Anadolu University and gained first-class honour. She received her Master degree and PhD in Physics in 2009 and 2013 respectively from the Anadolu University. The title of her PhD dissertation is “Shortcuts to Adiabaticity for Growing Condensates”.

She does research in Theoretical Physics, Optical Physics and PT symmetric systems. In September 2013, she joined Near East University as a full-time faculty. Currently, she is continuing her duty as the Head of Department of Physics Engineering of Near East University to which she was appointed to on September, 2020.

Teaching courses:

“General Physics I- PHY101(in English)-FİZ101(in Turkish Language)”,

“General Physics II- PHY102(in English)-FİZ102(in Turkish Language)”,

“Mathematical Methods in Physics II, PHE602 (in English)”,

“Introduction to Astronomy and Astrophysics, SEC218 (in Turkish Language)”.

She is married and the mother of two children.

ASSOCIATE PROF. DR. ILKER OZSAHIN

PhD in Physics, Çukurova University, Türkiye, 2014

ilker.ozsahin@neu.edu.tr

Assoc. Prof. Ilker is a physicist and received his Bachelor degree in physics and PhD in medical imaging from Cukurova University. He has experience in medical imaging devices such as PET, SPECT, and Compton Camera (CC), including modelling, simulation and characterization. After earning his PhD, he worked at Harvard Medical School and Massachusetts General Hospital for two years as a postdoctoral fellow. Also, he worked as a visiting postdoctoral fellow at University of Macau on multi-pinhole SPECT collimator design and implementation for brain imaging, as well as cardiac and small animal imaging by using adaptive collimators.

Recently, he worked at CERN for HCAL upgrade studies in the CMS experiment. He has been also working on AI applications and operational research in healthcare. Currently he is a visiting fellow at Cornell University and Associate Professor in Biomedical Engineering Department at Near East University.

ASSOCIATE PROF. DR. FATEMEH MIREKHTIARY

PhD in Physics, Eastern Mediterranean University, North Cyprus, 2014

fatemeh.mirekhtiary@neu.edu.tr

Assoc. Prof. Dr. Fatemeh Mirekhtiary was born on 14 August 1982 in Langroud north part of Iran. Her father was an employee and her mother was a teacher. Prof. Mirekhtiary completed her elementary, secondary and high school studies in Rasht.

Then, she enrolled to the Physics department of the Guilan University. She graduated from this department five years later and started to work as a research assistant at the Energy and water Institute of the Sharif University, and after two years, she graduated her master degree and started to teaching in the University of Applied Sciences in Tehran, after two years she started to her PhD studies.

She completed her PhD degree in Theoretical Physics at the Eastern Mediterranean University in Cyprus, under the supervision of Prof. Dr. Izzet Sakalli, and graduated at the 20 of May, 2014.

The title of her dissertation is “Effect of Hawking Radiation on the Non-Asymptotically Flat Space-time via the Hamilton-Jacobi Method”.

During her Ph.D. research, she has developed a tremendous interest in Theoretical Physics and passion for research in the area of the General Relativity and Quantum Gravity.

Her work has resulted in many papers those are based on the topic of Hawking Radiation (HR) of the Linear Dilaton Black Holes (LDBHs) and Grumiller Black Hole (GBH). She also studied Quasinormal Modes (QNMs) of uncharged GBH which is also known as Rindler Modified Schwarzschild BH.

This massive BH particularly admits a Rindler force or the modified Newton’s gravitational force, which is capable of explaining about 10% of the Pioneer anomaly and simultaneously ameliorates the shape of galactic rotation curves. After reducing the radial equation of the massless Klein-Gordon equation to the Zerilli equation, we compute the complex frequencies of the QNMs of the GBH. To this end, an approximation method which considers small perturbations around its horizon is used.

She has awards and prizes, and she is a member of many international institutions. Prof. Mirekhtiary can speak Turkish, English and Persian languages.

Teaching Courses: Electromagnetism, Optic and Acoustic, Physics101, Physics102. She is married and the mother of two children.

ASSOCIATE PROF. DR. GÜLSÜM AŞIKSOY

PhD in Computer and Instructional Technologies, Near East University. North Cyprus, 2016

gulsum.asiksoy@neu.edu.tr

Dr Gülsüm Aşıksoy completed her undergraduate degree in Physics Engineering at Ankara University. She earned her master's degree in Electrical and Electronics Engineering and her PhD in Computer and Instructional Technologies from Near East University.

Since 2017, Dr. Aşıksoy has been serving as the Educational Technologies Coordinator at YDU, where she also takes charge of coordinating physics courses. In addition, she is responsible for managing the Flipped Learning education project, which was implemented by YDU in the same year.

Dr. Aşıksoy's research interests are focused on interactive simulations in physics education, digital games in education, performance technologies in education, and artificial neural networks. She has published extensively in these fields, both nationally and internationally.

ASSIST PROF. DR. ERKUT İNAN İŞERİ

PhD in Physics, Middle East Technical University, Türkiye, 2004

erkut.inaniseri@neu.edu.tr

EDUCATION

Ph.D. , Middle East Technical University, Department of Physics 2004

M.Sc. , Middle East Technical University, Department of Physics 1998

B.Sc, Middle East Technical University, Department of Physics 1996

WORK EXPERIENCE

2005- : NEU, Faculty of Engineering; Assist. Prof. Dr

2004-2005: NEU, Faculty of Engineering; Dr

2008 -2009: NEU, Department of Electrical and Electronic Engineering; Vice Chairperson

2005 – 2011 & 2014 –2016: NEU, Faculty of Engineering; Physics courses Coordinator

1999-2004: Middle East Technical University, Research and Teaching Assistant

CURRENT RESEARCH AREAS

Web Accessibility and e-government

RESEARCH EXPERIENCE:

Research assistant in the Physics Department of Middle East Technical University

Developed various computer programs, based on exciton physics and Förster mechanism. These programs were used to run numerical experiments to investigate the structure-function relationship and energy transfer processes in the various photosynthetic Light-Harvesting complexes including Chlorophyll protein 29 and Light-Harvesting complex II of green plants,

Fenna-Matthews-Olson complex of green sulfur bacteria Cholorobium tepidum and Prosthecoclaris aestuarii and Chlorosomes.

VISITING RESEARCHER:

7th May – 7th August, 2001, Vrije University, Amsterdam

Three months visit to Laboratory of the Biophysics Group at the Vrije University, Amsterdam,

The Netherlands, under the European Science Foundation (ESF) "Femtochemistry and

Femtobiology-ULTRA Programme", in the year 2001.

During this visit, some experimental techniques have been learnt and absorption, linear dichroism, circular dichroism, polarized fluorescence and fluorescence line narrowing spectral measurements ave been performed on a specific light-harvesting complex from green sulphur bacterium. The complex studied was the Fenna-Matthews-Olson complex of Cholorobium tepidum.

Supervised Master Thesis

Gezahegn Mulusew Delele, "Web Accessibility of the Ethiopian Governmental Websites", Near East Univ., Software Engineering, 2019.

Supervisor: Kaan Uyar. Co-supervisor: Erkut İ. İşeri

MASTER THESIS TITLE:

· E. İ. İşeri (M.Sc., June 1998, METU), "Electronic excited states and excitation transfer

kinetics in the FMO protein of the photosynthetic bacterium Prosthecochloris aestuarii at

low temperatures".

DOCTORATE THESIS TITLE:

· E. İ. İşeri (Ph.D., June 2004, METU), "Exciton simulations of the optical properties of

several photosynthetic light-harvesting complexes".

Physics Laboratory Manual and work book:

G. Buğrahan and E. İ. İşeri, "Physics Laboratory manual and work book", Faculty of Engineering,

NEU, 2005.

Courses Taught:

PHY 105 (Physics, Faculty of Pharmacy)

FİZ 105 (Physics, Faculty of Pharmacy, in Turkish Language)

PHY100 (Physics, Faculty of Dentistry)

FİZ 100 (Physics, Faculty of Dentistry, in Turkish Language)

FİZ 103 (Physics, Faculty of Health Sciences, Turkish Language)

FİZ152 (Biophysics, Faculty of Health Sciences, in Turkish Language)

PHY 101 (General Physics I, Faculty of Engineering)

FİZ 101 (General Physics I, Faculty of Engineering, in Turkish Language)

PHY 102 (General Physics II, Faculty of Engineering)

FİZ 102 (General Physics II, Faculty of Engineering, in Turkish Language)

EE 216 (Electromagnetic Theory; Faculty of Engineering)

ELE 216 (Electromagnetic Theory; Faculty of Engineering, in Turkish Language)

EE 241 (Electrical Material, Faculty of Engineering)

BME 350 (Radiology Physics; Department of Biomedical Engineering; Faculty of Engineering)

PHY201 (Introduction to Quantum Physics, Faculty of Engineering)

AUD 101 (Sound Physics and Acoustic Principles, Faculty of Health Sciences)

SBF113 (Sound Physics and Acoustic Principles, Faculty of Health Sciences, in Turkish Language)

GEC 210 (Physics of Sports, Elective Course)

GEC 212 (Introduction to astronomy and astrophysics, Elective Course)