

## CURRICULUM VITAE

**Dr. Murat Özer**

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### Personal Information:

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Date of Birth</b>  | January 1, 1952                    |
| <b>Nationality</b>    | Turkish                            |
| <b>Marital Status</b> | Married, (two sons and a daughter) |

### Academic Qualifications:

|                   |      |  |
|-------------------|------|--|
| Ph. D. in Physics | 1981 | University of Maryland, College Park, MD, USA    |
| M. Sc. in Physics | 1977 | University of Maryland, College Park, MD, USA    |
| B. Sc. in Physics | 1974 | Middle East Technical University, Ankara, Turkey |

### Professional History:

- 1974-1975: Teaching Assistant of Physics, Middle East Technical University, Ankara, Turkey.
- 1976-1978: Teaching Assitant of Physics, University of Maryland, MD, USA
- 1979-1981: Research Assistant of Physics, University of Maryland, MD, USA
- 1981-1983: Postdoctoral Fellow, International Centre for Theoretical Physics, Trieste, Italy.
- 1983-1987: Assistant Professor of Physics, King Saud University, Riyadh, Saudi Arabia.
- 1987-1998: Associate Professor of Physics, King Saud University, Riyadh, Saudi Arabia.
- 1998-2000: Professor of Physics, King Saud University, Riyadh, Saudi Arabia.
- 2001-2002: Senior Optical Engineer, CIENA Corporation, Linthicum, Maryland, USA
- 2003-2009: Metropolitan Construction Services, Manager, College Park, MD, USA.
- 2009-2013: Kirklareli University, Kirklareli, Turkey
- 2013-Present: Yildiz Technical University, Istanbul, Turkey

### Academic Teaching:

1974-1975: Middle East Technical University, Ankara, Turkey. Taught laboratory for undergraduate Mechanics and Electromagnetism courses; assisted teaching and graded undergraduate Quantum Mechanics.

1976-1978: Teaching assistant in Physics, University of Maryland, College Park, MD, USA. Taught undergraduate laboratory and graded freshman physics.

1978-1981: University of Maryland, College Park, MD. Taught laboratory and graded freshman physics as well as fourth year Electromagnetism. Graded graduate Quantum Mechanics and Statistical Physics.

1983-2000: King Saud University, Riyadh, Saudi Arabia. Taught the following courses:

#### Undergraduate Courses:

*Basic Physics for Science and Engineering Students*  
*Basic Physics for Medical Students*  
*Classical Mechanics*  
*Statistical Physics*  
*Mathematical Physics*  
*Quantum Mechanics*

#### Graduate Courses:

*Quantum Mechanics*  
*Mathematical Physics*  
*Statistical Mechanics*  
*Elementary Particle Physics*  
*Electrodynamics*  
*Group Theory*  
*Quantum Electrodynamics*  
*Quantum Chromodynamics*  
*Quantum Mechanics*  
*General Relativity and Cosmology*

#### Undergraduate Research Projects:

*Research Projects for Graduating Undergraduate Students*

### Research Activities:

1978-1981: University of Maryland, College Park, MD, USA

Graduate theoretical research on Grand Unified Theories and their extension to the Pati-Salam Theory, Investigations on the possibility of the excitation of the color quantum number in high energy experiments, Investigations on the possible Grand Unified Theories that might produce observable Proton Decay, Neutron-antineutron oscillations and renormalization effects.

1981-1983: International Centre for Theoretical Physics, Trieste, Italy

Grand Unified Theories, Generalized Gauge Hierarchies.

1983-2000, King Saud University, Riyadh, Saudi Arabia

Low energy Grand Unification, Precocious unification in Simple Grand Unified Theories, Fermion Mass ratios, Investigations on the main cosmological problems of the Standard Model of Cosmology, Estimations of the Higgs Boson mass, Investigations on a model of Cosmology free of problems, String-motivated singularity free cosmological models, Investigations on the approximate N-loop Effective Potential, Quantum Mechanical treatment of the Universe, Estimations on the age of the Universe from astronomical data, String Cosmology, Generalizing the Equivalence Principle of General

Relativity to Electricity, Geometric Theory of Electromagnetism in General Relativity, Unified Theory of Gravity and Electricity based on a symmetric metric, Solution to the Cosmological Constant Problem, Electric Black Holes for Electrons in the Laboratory  
1984-1989: (Summers) International Centre for Theoretical Physics, Trieste Italy

Higgs Boson mass, Cosmology, General Relativity.

2001-2002: CIENA Corporation, Linthicum, MD, USA

Surface Scratch and Pit Analysis on Optical Interfaces, Quantification of Scattering from Fiber Surface Irregularities.

2003-Present:

Designed and worked on a vacuum electron scattering experiment (Obtained a rather important result; this experiment needs to be repeated in a professional laboratory with more energetic electron sources and power supplies), Theoretical and experimental arguments for the existence of the electrical time dilation, redshift, and spacetime curvature.

### **Present Research Interests:**

#### **Cosmology:**

Time-dependent Cosmological Constant Models, their field-theoretic formulation and Quintessence Physics.

#### **General Relativity:**

The electrical effects of the electrical time dilation, the electrical redshift and the electrical spacetime curvature. Metric unification of Gravitation and Electromagnetism, design of an experiment to test this idea, investigations on the possibility of building electrical black holes and white holes in the laboratory, properties of rotating black holes.

#### **High Energy Physics:**

Grand Unification, Study of the Higgs Boson Production and Estimation of the Higgs Boson Mass.

### **Research Related News Item:**

Please see the BBC Science News about my "Electrical Black Holes" on the Internet site:  
[http://news.bbc.co.uk/1/hi/english/sci/tech/newsid\\_523000/523161.stm](http://news.bbc.co.uk/1/hi/english/sci/tech/newsid_523000/523161.stm)

### **PUBLICATIONS:**

#### **Technical Reports:**

1. A. Janah, M. Özer, and J. C. Pati, Liberated Color in Leptoproduction II. Univ. of Md. Tech. Rep. No. 79-068.
2. S. K. Sekazi and M. Özer, Can Color Be Seen in Deep-Inelastic Scattering? FERMILAB Pub-80/80-THY.
3. A. Janah and M. Özer, The Two Photon Problem as a Means of Distinguishing the Charge of The Quarks. Univ. of Md. Tech. Rep. No. 81-221.

### Papers:

1. M. Özer and J. C. Pati, Liberated Color in Leptoproduction, Nucl. Phys. B159 (1979) 293. 2. S. K. Mtingwa and M. Ozer, Color Production in the Pati-Salam Model, Phys. Rev. D23 (1981) 85
3. M. Özer, Neutron-Antineutron Oscillations and Renormalization Effects for Delta B=2 Six-Quark Operators, Phys. Rev. D26 (1982) 3159
4. M. Özer, More on Generalized Gauge Hierarchies, Phys. Lett. B116 (1982) 355
5. M. Özer, Fermion Mass Ratios and Low Energy Grand Unification, Phys. Lett. B124 (1983) 64.
6. J. E. Kim and M. Özer, The Role of  $H_{75}$  in Fermion Mass Hierarchy, Phys. Lett. B134 (1984) 425.
7. M. Özer, Do Light Lepto-Quark Bosons Exist? Phys. Lett. B146 (1985) 233.
8. M. Özer, Precocious Unification in Simple Grand Unified Theories, Phys. Rev. D31 (1985) 181.
9. H. Al-Hendi and M. Özer, More on Generalized Gauge Hierarchies with Two-Loop Beta-Functions, Phys. Lett. B166 (1986) 183.
10. M. Özer and M. O. Taha, A Possible Solution to the Main Cosmological Problems, Phys. Lett. B171 (1986) 363.
11. M. Özer and M. O. Taha, A Model of the Universe Free of Cosmological Problems, Nucl. Phys. B287 (1987) 776.
12. H. Al-Hendi, M. Özer, and M. O. Taha, The Higgs Boson Mass in Standard Electroweak Theory, Z. Phys. C36 (1987) 639.
13. H. Al-Hendi, M. Özer, and M. O. Taha, Top Quark Mass from GUT Mass Relations, Phys. Lett. B213 (1988) 337.
14. M. Özer and M. O. Taha, Exact Solutions in String-Motivated Scalar Field Cosmology, Phys. Rev. D45 (1991) R997.
15. H. Alhendi, M. Özer, and M. O. Taha, Asymptotic Behavior of the Higgs Coupling in  $SU(2)_L \times U(1)$  Theory, Phys. Rev. D46 (1992) 428.
16. M. Özer, The Electromagnetic Gauge Invariance in the Models of  $SU(3)_L \times U(1)_X$  Electroweak Unification, Phys. Lett. B337 (1994) 324
17. M. Özer, Approximate Calculation of the N-Loop Effective Potential for Large Field Values through the Renormalization Group Equation, Mod. Phys. Lett. A11 (1996) 805.
18. M. Özer,  $SU(3)_L \times U(1)_X$  Model of Electroweak Interactions Without Exotic Quarks, Phys. Rev. D54 (1996) 1143.
19. M. Özer, GIM Mechanism and its Consequences in the  $SU(3)_L \times U(1)_X$  Models of Electroweak Interactions, Phys. Rev. D54 (1996) 4561.
20. M. Özer, Top Quark and Higgs Boson Masses from a Renormalization Group Analysis of the One-Loop Effective Potential, Tr. J. of Phys., 20 (1996) 1112.
21. M. Özer,  $SU(3)_L \times U(1)_X$  Models of Electroweak Unification with Natural Conservation Laws for Neutral Currents, Tr. J. of Phys., 21 (1997) 614.
22. M. Özer, Bounds on the Vacuum Component in Cosmology with a Decaying Vacuum Energy, Phys. Lett. B404 (1997) 20.

23. Khalid M. Mubarak and M. Ozer, Singular Scalar-Field Cosmologies with Energy Density Decaying as  $t^{-2}$ , *Class. Quant. Grav.* 15 (1998) 75.
24. M. Özer, On the One-Loop Yukawa Coupling Beta Function to Order  $Y_g^2$  in a General  $\alpha$  Gauge and its Gauge Independence, *Tr. J. of Phys.*, 22 (1998) 351.
25. M. Özer, Implications of a Quantum Mechanical Treatment of the Universe, *Mod. Phys. Lett. A*13 (1998) 347.
26. M. Özer and M. O. Taha, Spontaneous Decay of the Effective Cosmological Constant, *Mod. Phys. Lett. A*13 (1998) 571.
27. A. Al-Naghmoosh, M. Özer and M. O. Taha, An Upper Bound on the Higgs Boson Mass from a Positivity Condition on the Mass Matrix, *Mod. Phys. Lett. A*13 (1998) 753.
28. M. Özer, Fate of the Universe, Age of the Universe, Dark Matter and the Decaying Vacuum Energy, *ApJ.* 520 (1999) 45.
29. A. A. Al-Nowaiser, M. Özer and M. O. Taha, A Nonsingular Universe in String Cosmology, *Int. Jor. Mod. Phys. D*8 (1999) 43
30. M. Özer, Is There an Age of the Universe Problem after the Hipparcos Data? *Tr. J. of Phys.* (2000)
31. W. Mahmood, M. Ozer and E. Avram, Surface Scratch and Pit Analysis on Optical Interfaces, *SPIE* 2001
32. E. Avram, W. Mahmood and M. Özer, Quantification of Scattering from Fiber Surface Irregularities, *Journal of Lightwave Technology*, 20 (2002) 634.

### **Reports in arxiv.gov:**

1. M. Özer, On the Equivalence principle and a Unified Description of Gravitation and Electromagnetism, [gr-qc/9910062](https://arxiv.org/abs/gr-qc/9910062).
2. M. Özer, Proposed Experiments to Test the Unified Description of Gravitation and Electromagnetism through a Symmetric Metric, [gr-qc/9910095](https://arxiv.org/abs/gr-qc/9910095).
3. M. Özer, On the Possibility of Building a Black Hole for Electrons in the Laboratory, [gr-qc/9911011](https://arxiv.org/abs/gr-qc/9911011).
4. M. Özer, A Proposed New Test of General Relativity and a Possible Solution to the Cosmological Constant Problem, [physics/01030162](https://arxiv.org/abs/physics/01030162).