

CRD FRIENDS

NEWSLETTER



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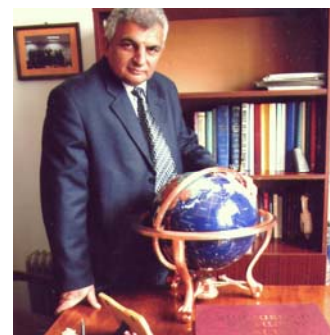
www.crdfriends.org

SEPTEMBER 2009

PROF. ASHOT CHILINGARIAN: THE ENGINE BEHIND CRD AND NOW ALSO YERPHI

The Support Committee for Armenia's Cosmic Ray Division (SCACRD) co-founders Anahid Yeremian and Joseph Dagdighian first visited the Cosmic Ray Division (CRD) of the Yerevan Physics Institute (YerPhi) and its scientists in 1999. The facilities were old and staff worked long stretches with intense dedication but with practically no pay. Yet despite this, motivated by the head of CRD, Prof. Ashot Chilingarian's leadership, the continuing superb quality of CRD's research amazed many. Funding for fuel, food, and electricity for the two high altitude research stations on Mt. Aragats was problematic. Equipment was dated but somehow with Armenian ingenuity they kept things working. Partnerships with foreign research institutions needed to be strengthened to account for the new post-independence environment in Armenia.

When the SCACRD was founded in January 2000, funding from the Diaspora paid for the most fundamental needs of the CRD and relieved Chilingarian of the burden of wondering if or when the electricity would be cut off. Prof. Ashot Chilingarian leveraged this opportunity to focus on new innovative and progressive programs such as Space Weather research, and wider application of CRD's advanced data analysis methods to different disciplines of science. An avid educator and lecturer at Yerevan State University, Prof. Chilingarian expanded the number of graduate students under his wing. He recently established the "*CRD Space Education*" program to provide facilities and mentorship to exceptionally bright science students interested in Cosmic Ray research. During CRD's 9-year partnership with the Diaspora, Chilingarian also renovated CRD's facilities and continues to expand programs to accommodate talented young scientists, engineers, and staffers and retain them in Armenia. The international community has frequently commended CRD for its contributions to global science.



Prof. Ashot Chilingarian
Photo by Tom Vartabedian

Chilingarian endeavored to implement his vision of educating talented Armenian youth to become outstanding scientists and engineers while instilling in them a sense of commitment and integrity. His insightful global approach to Armenian science resulted in a 7-fold increase in international funding and the recruitment of a cadre of bright young Armenians.

Professor Chilingarian was recently appointed as director of the entire Yerevan Physics Institute. While continuing to serve as the head of CRD, Prof. Chilingarian is also committed to revamping research programs at YerPhi to utilize Armenia's native scientific talent, attract international funding, and develop technologies to enhance the welfare of Armenia's people. Areas being considered include medical isotope production and medical imaging technologies.

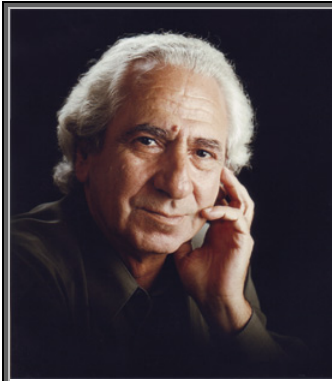
The CRD-Diaspora partnership is an excellent example of what we can accomplish together.

ANOTHER GREAT BENEFIT CONCERT FOR THE CRD
SUNDAY, MARCH 21, 2010 AT 3:00 PM

FEATURING **MAESTRO LEVON ABRAHAMIAN**
FORMER DIRECTOR OF THE YEREVAN STATE OPERA ORCHESTRA

THE PROGRAM WILL INCLUDE ARMENIAN CLASSICAL AND POPULAR MUSIC
PERFORMED BY INSTRUMENTALISTS AND VOCALISTS

NOTE OUR NEW VENUE
JEWISH COMMUNITY CENTER OF SAN FRANCISCO, 3200 CALIFORNIA ST.



CRD HOSTS ASTROPARTICLE SYMPOSIUM MAILYAN WINS BEST PAPER PRIZE

The “*Forecasting of the Radiation and Geomagnetic Storms by Networks of Particle Detectors (FORGES-2008)*” symposium was held at CRD’s International Conference Center at Nor Ambert in October 2008.

This conference focused on networks of particle detectors around the globe to issue warnings of approaching radiation and geomagnetic storms. Accurate forecasting of the occurrence and severity of such events is extremely important due to their disruptive impact on our daily lives.

Participants from United States, Italy, Germany, Great Britain, Croatia, Greece, Ukraine, Russia, Costa Rica, and Armenia presented their current work and discussed future steps. Noted astrophysicist, Dr. Natchimuthuk Gopalswamy from NASA, who headed the International



Prof. Chilingarian and NASA’s Dr. Gopalswamy at FORGES-08

Heliophysical Year 2007 program and was on the international board of FORGES-08, presented his work on Solar Sources of Ground Level Enhancement and interacted with the CRD students during the conference.

CRD’s own scientists, engineers, and students presented over 20 papers describing their research. CRD’s young presenters included Bagrat Mailyan who reported on measurements using the particle detectors at the Aragats Space Environmental Center and Karen Arakelian on assembling and tuning of the Space Environmental Viewing and Analysis Network (SEVAN) Units being deployed in a number of countries.



Bagrat Mailyan receiving the Alikhanian Award

The international conference board selected Bagrat Mailyan’s paper as the best among the student papers, for which he received the Alikhanian award, named in honor of world renowned physicist Artem Alikhanyan who founded the CRD and YerPhI in 1943.

RADIO MEASUREMENTS ON MT ARAGATS

CRD’s Aragats Space Environment Center continues to add new techniques to monitor solar activity. Solar flares and Coronal Mass Ejections (CMEs) spew enormous amounts of cosmic ray particles towards the earth, while simultaneously generating characteristic radio signals. These signals, traveling at the speed of light, reach the Earth before the Cosmic Ray particles, thus offering an early indication of events on the Sun.

Measurements of radio patterns generated by CMEs will greatly improve the reliability of the forecasting of and warning against the most violent space storms. Professor Gemmeke from the Karlsruhe Research Center in Germany introduced the antennas for measuring radio

patterns to CRD in the Fall of 2008. CRD’s radio engineers applied their expertise to demonstrate the feasibility of collecting the data from these antennas. In the summer of 2009, three antennas with the associated electronics were installed at CRD’s Nor Ambert and Aragats research stations. Data from these antennas



David Pokhsroryan Installing Antenna

proved that the radio measurements have sufficient precision to enhance the Space Weather Forecasting techniques. Continual monitoring started this Autumn with equipment supplied by Karlsruhe.

Future plans include manufacturing these antenna systems at YerPhI and deploying them at locations around the world to improve Space Weather forecasting. A natural set of recipient countries would be the countries of CRD’s Space Environmental Viewing and Analysis Network (SEVAN)

This network of antennas will also be very useful to investigate lightning storms. Recent research indicates Cosmic Ray phenomena are well correlated with the occurrence of lightning storms. Mt. Aragats is an ideal location for this research because of its existing infrastructure and the frequent thunder storms that occur during the summer.

MAGNETOMETRIC MEASUREMENTS IN ARMENIA



CRD scientist, Artur Reymers, establishing wireless connection of the geomagnetic sensors to CRD computers.

The magnetic field surrounding the earth is usually thought to be constant. However magnetic field disturbances in the space between the sun and the earth can severely alter the magnetic field surrounding the earth causing what is known as geomagnetic storms. Such disturbances occur due to violent processes at the sun, such as the ejection of large volume of hot and charged matter known as Coronal Mass Ejections (CME). These variations can induce damaging current surges in electrical power lines causing widespread blackouts, induce currents in pipelines accelerating their corrosion, play havoc on satellite electronics, and cause astronauts to be subjected to excess radiation requiring them to take cover in special compartments aboard the International Space Station.

The Lviv Space Research Institute of the Ukrainian Academy of Science and the Cosmic Ray Division of YerPhI are partnering with each other to establish the LLEMI-417 Magnetometric Stations on Mt. Aragats.

This summer the first magnetometric station was installed at CRD's Nor Ambert research station at 6,000 ft. on Mt. Aragats. A similar monitoring station will be installed at CRD's Aragats Research Station at 10, 500 ft. altitude.

This new instrumentation will allow the CRD scientists and their partners to directly correlate cosmic ray and geomagnetic data, enhancing their ability to forecast major geomagnetic storms.

AZIZIAN AND SHIRINYAN PERFORM THE 2009 CRD BENEFIT CONCERT



Violinist Serguei Azizian and pianist Marianna Shirinyan (holding flowers) with the Support Committee of Armenia's Cosmic Ray Division, San Francisco Bay Area Chapter, after the concert.

Internationally acclaimed violinist Serguei Azizian and pianist Marianna Shirinyan performed at an unforgettable concert on March 15, 2009 in San Francisco, to benefit the scientists, engineers, and students of the Cosmic Ray Division of Yerevan Physics Institute in Armenia.

Serguei Azizian, currently the concertmaster of the Copenhagen Philharmonic Orchestra and a violin professor at the Royal Danish Academy of Music, studied in Yerevan and the Leningrad Conservatory. He was a member of the famous Leningrad Philharmonic Orchestra prior to his appointment in Copenhagen. Serguei also performs as a soloist with the Yerevan State Philharmonic and travels the world as a soloist with orchestras.

Marianna Shirinyan is an internationally known pianist. She was a prizewinner at a number of international piano competitions and was named best musician in 2008 by the Danish Critics Association. She is a member of the Esbjerg Ensemble in Denmark and teaches at the Royal Danish Music Conservatory.

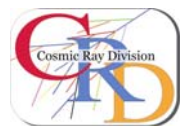
We are grateful to Serguei and Marianna for their commitment to Armenia's future and support of CRD.

Yes, I want to promote Armenian science and education by supporting the excellent work of the dedicated scientists, engineers, technicians, & students of the Cosmic Ray Division of Yerevan Physics Institute.

Name _____ Address _____

My contribution is in the amount of \$2000 \$1000 \$500 \$200 \$100 \$ _____

Send this cut-out with your check, payable to **AESA-CRD**
And mail to the Support Committee of Armenia's Cosmic Ray division at:
SCACRD, P.O. Box 655, Menlo Park, CA 94026



CRD FRIENDS IN MANY CITIES SHARE A COMMON PURPOSE

by Anahid Yeremian

I would like to devote this column to express my personal gratitude to all of you, the people all over the United States, Canada, and around the world, who have joined me with a vision of fueling Armenia's development by supporting the dedicated and creative scientists, engineers, and students of the Cosmic Ray Division. When my partner Joe Dagdigian and I founded the Support Committee for Armenia's Cosmic Ray Division (SCACRD) in 2000, we had no idea what kind of reception it would find in the Diaspora. To our relief and delight, you have embraced this important group of scientists and this globally vital scientific organization in Armenia as your own. Our effort together has been synergistic and rewarding. Thank you very much!

SCACRD operates under the umbrella of the Armenian Engineers and Scientists of America (AESA). AESA's active chapters in Los Angeles, Washington DC and Detroit have adopted the CRD with open arms and have rendered valuable support. Special thanks to the AESA presidents, treasurers, and accountants for managing Diaspora's CRD contributions with transparent precision.

Currently the AESA-MI chapter in Detroit is in the process of identifying and purchasing a snowcat vehicle which can transport 5 to 12 people to the high altitude research center on Mt. Aragats during winter shift changes. The task is formidable, given that the CRD needs are unique. Mr. Harutyun Vaporciyan and his colleagues at AESA-MI diligently searched, identified, and bargained to purchase the proper summer shift change car for CRD last year and the two snow mobiles used for power line inspections and emergency winter transport three years ago. They have the best expertise to get the job done.

Special thanks to the United Armenia Fund (UAF) for transporting urgently needed instruments and educational materials to the CRD – always precise, and just on time.

Special thanks also to our small but dedicated committee in Toronto, Canada led by Haig Missakian and his family.

2010 CRD CALENDAR ISSUED!

In August of this year the newly designed CRD 2010 calendar, *Spectacular Armenia*, was completed thanks to the efforts of CRD's graphic designer, Narine Khachatryan, and Joe and Lisa Dagdigian. Joe and Lisa are founders and active members of the Boston chapter of the Support Committee for Armenia's Cosmic Ray Division. The calendars were printed and collated by the Tigran Medz printing house in Yerevan. This year's photographs include not only those taken by CRD staff members but by supporters in the United States who donated superb photographs of Armenia. Our thanks to Tom Vartabedian, Nancy Kushigian, Joseph Dagdigian, and from CRD's Prof. Ashot Chilingarian and Arthur Reymers for photo contributions.



2010 Spectacular Armenia Calendar
available for purchase on the website and selected stores

The calendar is available from the www.crdfriends.org website and will also be sold during various Armenian events in the USA. Republic of Armenia commemorative stamp books celebrating CRD's achievements, and Mt. Ararat and Mt. Aragats post cards are also available. These items make perfect gifts for your Armenian and non-Armenian friends. Proceeds from these sales directly benefit the work of the outstanding scientists at the CRD.

Visit www.crdfriends.org for your gift-shopping needs.

The Support Committee for Armenia's Cosmic Ray Division (SCACRD) operates under the umbrella of the Armenian Engineers and Scientists of America Inc. (AESA), a 501 (c) 3, tax-exempt (ID 95-3957498), charitable organization dedicated to promoting scientific and engineering excellence in the United States and Armenia. AESA has chapters in California, Michigan, and greater Metropolitan Washington DC area (www.aesa.org).

In Armenia, SCACRD operates under the umbrella of the National Foundation for Science and Advanced Technology (NFSAT), a non-profit, non-governmental, independent organization dedicated to the promotion and funding of science and education for peace in Armenia (www.nfsat.am).

AESA and NFSAT's financial integrity are assured by annual audits in accordance with international standards by both the IRS and the independent company Grant Thornton International.