Photos: Zach Marshall

Hit it over the Alps

Every summer weekend, several dozen CERN physicists gather to enjoy a beloved American tradition: They play for the Quarks and the Leptons in an international softball league.

The games are hosted by the US Marines at a site just north of Geneva, with a view of the Swiss Alps over the centerfield fence.

Playing the Marines is "like jocks versus nerds, and we tend to give them a run for their money," says Jim Degenhardt, a postdoc from the University of Pennsylvania working on the ATLAS experiment. "Unfortunately, the jocks usually win, but we all have fun."

Americans who grew up playing baseball or softball are in the minority on the two CERN teams. Some of the European players, particularly the English, had never seen a baseball bat before arriving at CERN, but by the end of the summer they can hit a baseball at least as comfortably as they hit a cricket ball. The teams have a strong tradition of coaching anyone with the desire to learn, yet remain avidly competitive.

Their competition includes teams of employees from international companies and organizations like Merrill Lynch, Caterpillar, and the United Nations.

The Quarks and the Leptons are part of the CERN softball club, which fields more women in this co-ed league—and, incidentally, more talented women—than any other club. It was also the first ball club in the world to have a page on the World Wide Web, beating out any team from Major League Baseball. (Of course it had a leg up, since the Web was invented at CERN.)

Vicki Moeller, an ATLAS collaborator from the University of Cambridge, says, "Sipping A&W [root beer] between innings, looking out on Geneva and the lake from our field, and hitting a game-winning two-run double in the bottom of the ninth is a great way to spend a Sunday afternoon."

Zach Marshall

Armenia detects space weather

On Mount Aragats, the highest point in the Armenian landscape, atop a volcano ribboned with glaciers, lava-born fissures, and medieval fortifications, an early 20th century observatory is leading Armenian physics in new, 21st century directions.

After the fall of the Soviet Union, Armenian researchers realized they could not afford to maintain their observatories and develop large detectors for competitive research in high-energy physics.

Taking advantage of the airy altitude of their observatories, they began investigating new avenues of research.

"We found our niche in the relatively new science of space weather," explains Ashot Chilingarian, director of the Yerevan Physics Institute. "You don't need a huge detector to make excellent physics. Instead, you need a small detector in the appropriate place."

Research into solar flares and geomagnetic storms is increasingly valuable as the world depends more on satellite technologies. Solar flares, for example, can knock out an entire satellite or power grid.

The ground-based detectors designed and fabricated by Armenian scientists, each no wider than a meter, complement space-based systems that forecast space weather. They record millions of particles produced in cosmic ray showers from the sun.

The success of these detectors has contributed to their dispersal around the globe. Armenia leads the Space Environmental Viewing and Analysis Network, or SEVAN, and has crafted SEVAN detectors for Croatia, Bulgaria, India, and Slovakia. This network can provide reliable 24-hour forecasting and advanced solar storm warnings, crucial to sophisticated technologies that protect astronauts and your next door neighbor's GPS.

Another detector program studies the multiplication and acceleration of electrons in thunder clouds, which can affect air travel. This little-understood phenomenon has been puzzling scientists since the 1990s.

Daisy Yuhas

Photo courtesy of Ashot Chilingarian