

## Appreciating successes

Science is a forward-thinking endeavor: It is more concerned with what can be discovered in the future than what has been learned in the past. Once accomplished, successes are usually taken for granted.

Sometimes it is worth stepping back to reconsider achievements. This is especially true for the proposed International Linear Collider. While much attention and discussion is focused on when, where, and how this machine could be built, it is easy to forget the ILC progress achieved so far.

The first milestone, the 2004 choice of acceleration technology, could have split the particle physics community and derailed the ILC. However, strong leaders eased the way through a difficult and complex global decision-making process to begin a unified R&D effort.

The 2007 release of the ILC *Reference Design Report* is another milestone (see story on page 10). Arriving at this point in ILC planning has taken many thousands of person-years of effort. Yet most of the design process is invisible to people outside the enterprise; they often don't appreciate just how much thought and effort has to go into preparing a plan for a large scientific facility, even before any decision to proceed is made. For their effort, we congratulate Barry Barish and all people involved in advancing the ILC.

Meanwhile, particle astrophysicists and cosmologists are intensely interested in dark energy and dark matter. They are discussing a suite of possible future observations and experiments. But dark energy and dark matter are so much more than a mystery to be explored: Their existence already solves a vast number of problems that cosmologists were facing, an achievement that is often overlooked.

The "concordance model" of cosmology, which incorporates visible matter, dark matter, and dark energy in just the right mix, brings a coherent outline to physicists' understanding of the universe (see page 16). It has unified cosmology just as the Standard Model unified particle physics.

Physicists don't dwell on their successes; they quickly move on and keep exploring and discovering. As you read this issue, take a moment to appreciate the extraordinary successes of physics research and how they enliven our world.

**David Harris, Editor-in-chief**



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