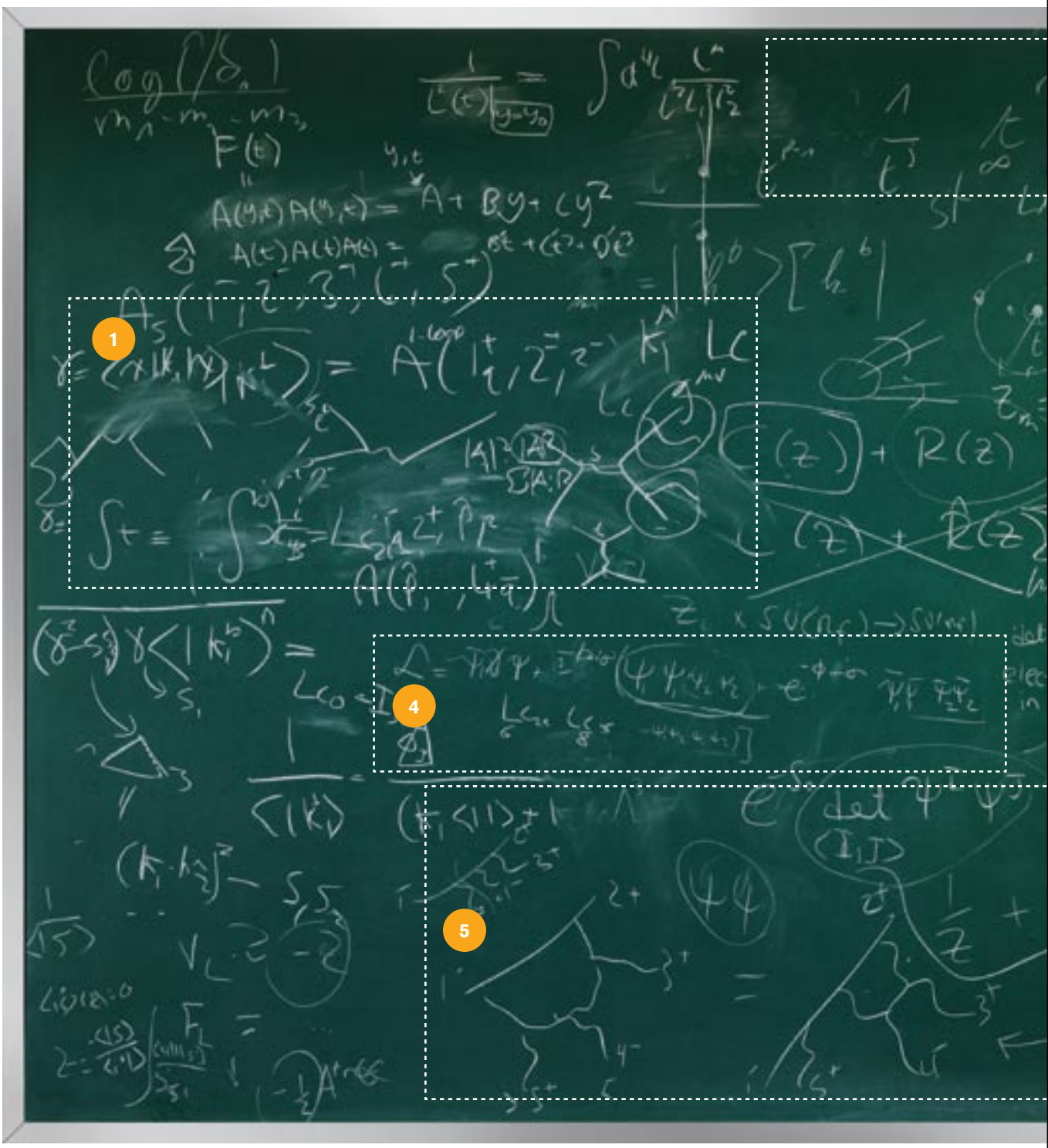
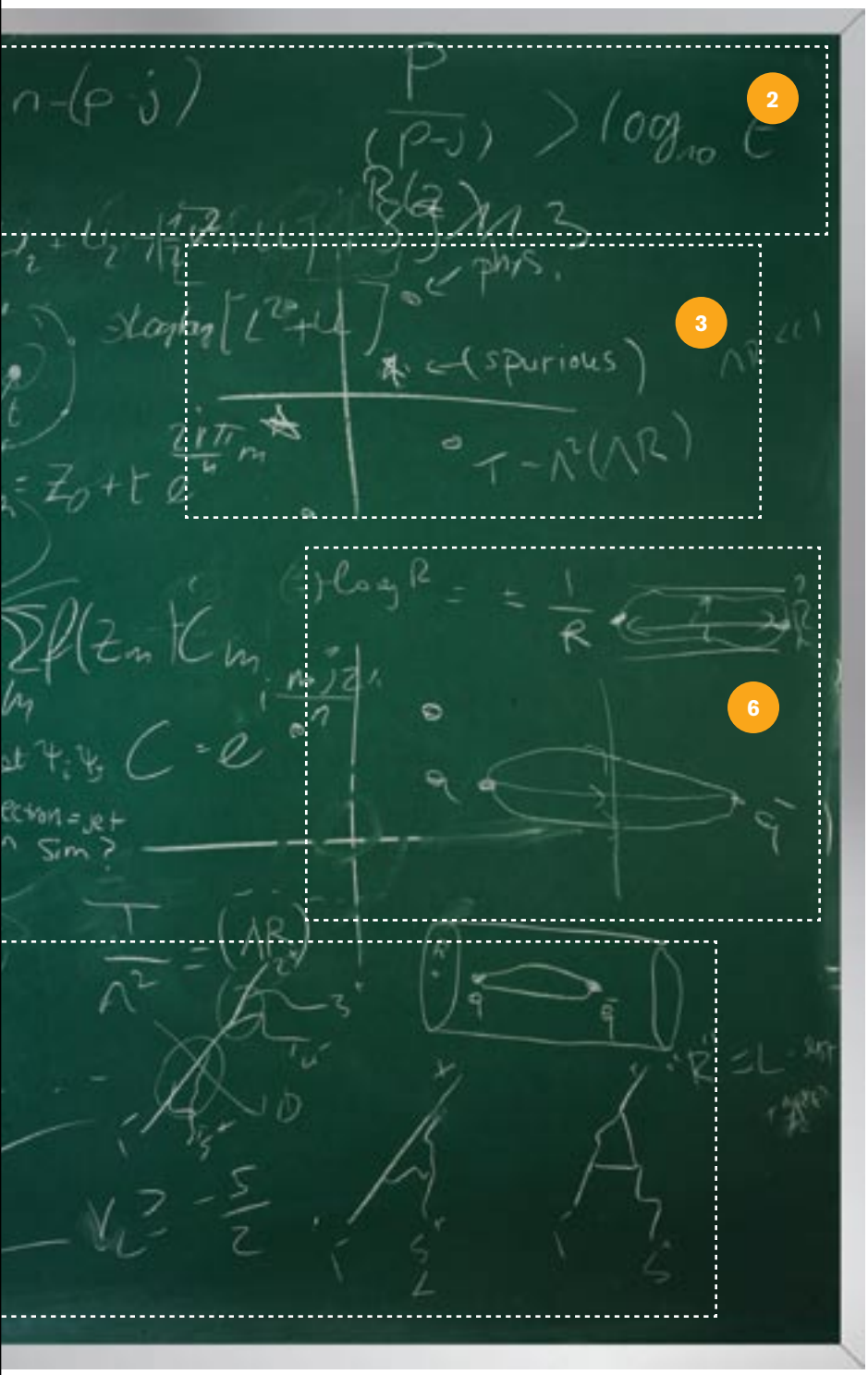
Chalkboard discussions usually arise spontaneously, with one person explaining something to a small group standing nearby. Scratchings on the board tend to represent fragments of a conversation rather than a complete train of thought. "I may write an equation and then talk for 10 minutes and then write another equation not directly related to the first one," says theorist Tom Rizzo of the Stanford Linear Accelerator Center.

This particular chalkboard, on the third floor of SLAC's Central Lab building, bears the marks of people discussing what might come out of collisions at the soon-to-open Large Hadron Collider near Geneva. "Physicists at the LHC will try to find new physics, but it will look a lot like old physics," says SLAC theorist Lance Dixon, whose writing populates much of the board. "They have to know what the Standard Model predicts before they go running to *The New York Times*." Chalk in hand, researchers work at understanding what they're looking for.





1 Board etiquette varies. SLAC postdoc Daniel Maître feels that erasing someone else's writing is "taboo," but his next-door neighbor, postdoc Darren Forde, doesn't mind erasing once the board is full. Postdoc Carola Berger points out that as a practical matter, this chalkboard in the hall across from their offices has no eraser in the tray. "Maybe it disappears into a black hole?" she suggests. Over the course of a week, more musings have appeared in the small nooks and crannies between previous work. Signs of erasing, perhaps from the swipe of a hand, are evident here as well.

2 One-loop amplitudes are a way to more precisely analyze collisions, in this case involving quarks and gluons. Here, what remains of Maître's classic Swiss handwriting concerns how to enter amplitude information into a computer program. "Will 15 digits of accuracy be enough to get these algorithms to work? That's one of the issues Daniel will be playing around with in the next few months," Dixon says.

3 Dixon, Berger, Forde, and Maître discussed this graph depicting properties of an amplitude. Amplitudes help predict how often particular scatterings of particles result from a collision. The "phys" refers to a physical singularity, in which the amplitude becomes infinite. "Spurious" refers to an instance where the overall amplitude remains finite.

4 This line of unknown authorship is a Lagrangian equation, unrelated to most of the other discussions on the board. Dixon speculates that it's a two-dimensional model of a four-fermion interaction; the four fermions are the fork-like Ψ symbols at the end of the equation.

5 These drawings are scalars of one-loop amplitudes, part of a project Dixon and Berger are working on. "It's one piece of millions that we have to calculate for one-loop amplitudes for LHC background studies," says Berger.

6 This set of sketches may be attempts to understand how quarks become trapped in composite particles, rather than existing as free particles. Other guesses as to the possible topic include string theory and hadronization—the process in which quarks created in high-energy collisions combine to form hadrons. That's the nature of the board: Work is fleeting, often untraceable, and sometimes indecipherable out of context.

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