Is the Oppenheimer movie accurate? Expert breaks down science of box office hit

There's a lot of science underneath the *Oppenheimer* story, which makes it treacherous for a movie director. After all, J. Robert Oppenheimer was a physicist. You can't understand him without understanding his science. Nor can you fully grasp his role in the Manhattan project, the most important scientific and engineering project of modern times. In some ways, the film's writer and director Christopher Nolan goes to extremes to be true to scientific fact, even when it's potentially damaging to the narrative.

In one small but telling example, there's the awkward fact that sound and light don't travel at the same speed—awkward because the base camp, where Oppenheimer observed the detonation of the first atomic bomb, was about 10 miles from ground zero. That means a delay of roughly a minute—a full minute of awed silence before the blast in the movie's soundtrack can catch up with the mushroom of fire obscenely unfolding itself on the screen. A lesser director would be terrified of that gap (if they were even aware of it), imagining the audience members squirming in their seats, waiting for the boom. Nolan not only is unafraid of showing the delay but (by my rough count in the movie theater) extends it by a good bit for dramatic emphasis.

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