

Seminario Interdisciplinare (Fisica-Filosofia)

Coordinatori: *A. Cappelli, E. Castellani, F. Colomo*

Dipartimento di Fisica, Polo Scientifico (Sesto Fiorentino)
Aula Magna, Orario: 15-18

I tre fondamentali lavori di Einstein del 1905

III incontro: Venerdì 30 Giugno

Luca Lusanna (*Infn, Firenze*)

From time and space to space-time: the crisis of simultaneity and the emergence of 3-space from clock synchronization

In the Annus Mirabilis 1905 Einstein started a revolution whose first stage was the replacement of Newton's absolute time (and simultaneity) and absolute 3-space with the absolute Minkowsky space-time, where no notion of intrinsic simultaneity and instantaneous 3-space exists. The standard Einstein convention for clock synchronization selects inertial frames but does not work in non-inertial ones. The next step, general relativity implies that also space-time is not absolute but is dynamically determined by Einstein's equations. The geometrical view of gravitation implies that in each Einstein space-time also the allowed conventions for clock synchronization are dynamically determined. The implications of this revolution for space experiments, for astrophysics and cosmology are still poorly understood.

Christian Wüthrich (*University of Pittsburgh*)

Presentism, Becoming, and the Rietdijk-Putnam Argument Reconsidered

In this talk, I shall discuss philosophical implications arising from Einstein's 1905 article on special relativity. Most importantly, I address what can be called the "Rietdijk-Putnam" argument, which purports to show that the thesis of presentism is no longer tenable in the context of special relativity. Equally, the notion of becoming becomes problematic in this context. Various options for the presentist and the defender of becoming left over in the aftermath of the Rietdijk-Putnam argument are considered. I conclude that given the metaphysical constraints imposed by special relativity, philosophically adequate notions of presentism and becoming are no longer defensible.