

Smeenk Th 11:30 - 2:30

Effective Field Theories

Philosophers often implicitly take physical theories as giving, in principle, complete descriptions of possible worlds: for example, the way the world would be if a particular theory were true. Although the actual world is not among this set of possibilities, due to the limitations of existing theories, this assumption shapes treatments of the content of theories and how they represent the world. In this seminar we will explore a very different understanding of the structure and content of physical theories motivated by the idea of “effective field theories,” developed within physics. An effective field theory gives an approximate description of the relevant causal structure within a limited domain of applicability. In a sense that can be made precise, physics at high energies “decouples” from physics at lower energy scales, so that high energy physics has limited impact on physics at lower energy scales. We will discuss the impact of these ideas on philosophical questions, such as the status of realism, that have been the focus of recent debates.