Periodically driven (Floquet) quantum systems may host interesting phenomena, such as topological phases of ultra-cold atoms [1] and light-induced superconductivity [2]. These systems are a long-standing subject of theoretical studies, which recently focused on isolated quantum many-body systems [3]. In the seminar I will discuss recent results [4] on the periodically driven Fermi-Hubbard model a prototype of strongly correlated electrons. First, I will show that for moderate interaction the system thermalizes, as expected for generic isolated many-body systems. Then, I will describe the emergence of a prethermal regime (Floquet prethermalization) as the interaction is increased. This regime is a consequence of a well-known bottleneck mechanism, that is the quasi-conservation of doublon excitations at large interaction. Finally, I will discuss the existence of a critical drive frequency at which the system thermalizes despite the large interaction, due to a resonant condition of the drive frequency with the doublon excitation energy.

References