Stochastic conservation laws, existence and long time behavior

The talk starts with a brief introduction to the basic objects of the theory of SPDEs. Then, I will write the kinetic form of stochastic conservation laws and present a solution theory for these. The advantage of the kinetic formulation is that it allows the use of powerful tools such as averaging lemma. Although these equations formally do not dissipate energy, it has been shown in a breakthrough article by E, Khanin, Mazel and Sinai that, for the stochastic Burgers equation, existence of an invariant measure and ergodicity hold. They used Lax-Oleynik formula. In the case of a general conservation laws, we do not have such a formula but an averaging lemma can be used to prove the same result.