A hot and dense medium is created during the heavy-ion collisions, affecting the strongly interacting particles forming jets. This typically leads to a suppression of jet production in heavy-ion collisions compared to jet production in proton-proton collisions. A study of this suppression in a dijet system, i.e., in a system of two back-to-back jets, can shed light on the details of the parton energy loss process responsible for this suppression. This thesis presents a measurement of dijet momentum balance in Xe+Xe collisions at $\sqrt{s_{\mathrm{NN}}} = 5.44$ TeV as measured by the ATLAS experiment at the LHC. Results were compared with the previous measurement of dijet momentum balance in Pb+Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV. A significant momentum imbalance was observed in the most central Xe+Xe collisions, and this imbalance was decreasing with decreasing nuclear overlap. The ratio of a pair nuclear-modification factor further quantifies the differences between the dijet suppression in Xe+Xe and Pb+Pb collisions. The results are consistent with those measured in Pb+Pb data when compared in classes of the same event activity and when taking into account a difference between the center-of-mass energy of the initial parton scattering process in Xe+Xe and Pb+Pb collisions. These results provide new input for the understanding of the role of energy density, system size, path length, and fluctuations in the parton energy loss.