Covariance is linear

If a,,..., an are constants, b,,..., b, are constants and X,,..., Ym are random variables, then

In particular if all those constants are 1, $(or(X_1 + ... + X_n, Y_1 + + Y_m) = \hat{\Sigma} \hat{\Sigma} (or(X_1, Y_1))$ i=1 j=1

If j=1, j=1 and the constants are not necessarily 1, $Cov(a, X_1, b, Y_1) = a, b, Cov(X_1, Y_1)$ i.e. the constant multiples of random variables can be pulled outside of a covariance.