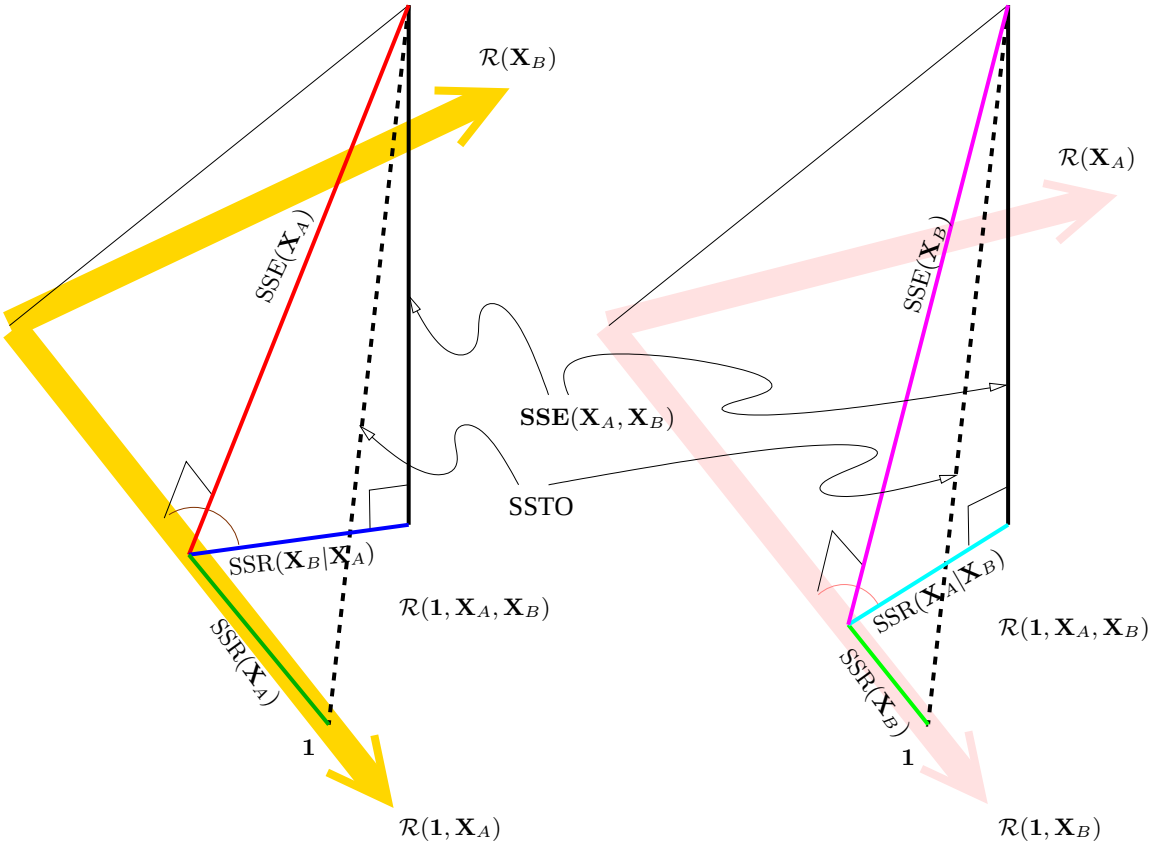
ANOVA decomposition



SSTO	$\mathrm{SSR}(\mathbf{X}_A)$	$\mathrm{SSR}(\mathbf{X}_B\|\mathbf{X}_A)$	$\mathbf{SSE}(\mathbf{X}_A, \mathbf{X}_B)$
SSTO	$\mathrm{SSR}(\mathbf{X}_B)$	$\mathrm{SSR}(\mathbf{X}_A\|\mathbf{X}_B)$	$\mathbf{SSE}(\mathbf{X}_A, \mathbf{X}_B)$

$$F = \frac{\frac{\Delta\mathrm{SSR}}{\Delta\mathrm{df}}}{\frac{\mathrm{SSE\ (full)}}{\mathrm{df\ (full)}}} = \frac{\frac{\Delta\mathrm{SSE}}{\Delta\mathrm{df}}}{\frac{\mathrm{SSE\ (full)}}{\mathrm{df\ (full)}}} = \frac{\frac{\mathrm{SSE\ (reduced)} - \mathrm{SSE\ (full)}}{\mathrm{df\ (reduced)} - \mathrm{df\ (full)}}}{\frac{\mathrm{SSE\ (full)}}{\mathrm{df\ (full)}}}$$

ANOVA decomposition

$\mathbf{X}_A$ first

Source		SS	df
A1.	$\mathbf{X}_A$	$\mathrm{SSR}(\mathbf{X}_A)$	k_1
A2.	$\mathbf{X}_B\|\mathbf{X}_A$	$\mathrm{SSR}(\mathbf{X}_B\|\mathbf{X}_A)$	k_2
A3.	Error	$\mathrm{SSE}(\mathbf{X}_A, \mathbf{X}_B)$	$n-p$
	Total	SSTo	$n-1$

$\mathbf{X}_B$ first

B1.	$\mathbf{X}_B$	$\mathrm{SSR}(\mathbf{X}_B)$	k_2
B2.	$\mathbf{X}_A\|\mathbf{X}_B$	$\mathrm{SSR}(\mathbf{X}_A\|\mathbf{X}_B)$	k_1
B3.	Error	$\mathrm{SSE}(\mathbf{X}_A, \mathbf{X}_B)$	$n-p$
	Total	SSTo	$n-1$