

shows a "voltage divider" circuit which consists of 2 resistors connected in series. The current through each of the resistors must be the same because the resistors are in series, i.e.  $I_{PS} = I_1 = I_2$ , while the total voltage  $V_{PS}$  equals the sum of voltage on each resistor (Loop rule) so the total resistance of the circuit is equal to the sum of all resistances presented in Eq (3):  $R_{12} = R_1 + R_2$  ..... (3)