The Concentration gradient theory simulations.

Based on the Zn isotope value formula:

$$\delta^{66}Zn= [(^{66}Zn/^{64}Zn)_{sample}/ (^{66}Zn/^{64}Zn)_{IRMM\text{-}3702}-1]*1000$$

In the following derivation equations, C_{sp} represents the sample concentration, C_{st} represents the specimen concentration, and k represents the sample-to-standard concentration ratio ($k=C_{sp}/C_{st}$). And f symbolizes the ratio of interference signal intensity to isotope signal intensity within a specific concentration of Zn standard solution.

Model 1 Considering the isobaric interferences on ^{64}Zn:

$$\delta^{66}Zn= [(^{66}Zn/^{64}Zn)_{sample}/ (^{66}Zn/^{64}Zn)_{IRMM\text{-}3702}-1]*1000$$

$$=[(^{66}C_{sp}/^{64}C_{sp})/(^{66}C_{st}/^{64}C_{sp})-1]*1000$$

$$=[(k^{66}C_{st}/(k^{64}C_{st}+f*^{64}C_{st}))/(^{66}C_{st}/(^{64}C_{st}+f*^{64}C_{st}))-1]*1000$$

$$=[k(1+f)/(k+f)-1]*1000$$

$$=[f(k-1)/(k+f)]*1000$$

Model 2 Considering isobaric interferences on ^{66}Zn, ^{68}Zn, and ^{70}Zn.

$$\delta^{66}Zn= [(^{66}Zn/^{64}Zn)_{sample}/ (^{66}Zn/^{64}Zn)_{IRMM\text{-}3702}-1]*1000$$

$$=[(^{66}C_{sp}/^{64}C_{sp})/(^{66}C_{st}/^{64}C_{sp})-1]*1000$$

$$=[((k*^{66}C_{st}+f*^{66}C_{st})/k*^{64}C_{st})/((^{66}C_{st}+f*^{66}C_{st})/^{64}C_{st})-1]*1000$$

$$=[(k+f)/(k+k*f)-1]*1000$$

$$= [(f- f*k)/(k+k*f)]*1000$$