Notes on the GSW function
gsw_deltaSA_from_rh0_t_exact(rho,SP,t,p)

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This function has inputs of in situ density, “rho”, Practical Salinity, “SP”, in situ temperature, “t”, and sea pressure, “p”. This function is essentially the following three lines of code

```
SA = gsw_SA_from_rho_t_exact(rho,t,p);
SR = gsw_SR_from_SP(SP);
deltaSA = SA - SR;
```

That is, Absolute Salinity is first calculated from the input values of in situ density, in situ temperature and sea pressure. Reference Salinity (which is simply proportional to Practical Salinity) is then calculated and subtracted from the value of Absolute Salinity to yield the Absolute Salinity Anomaly, “deltaSA”, $\delta S_A$.

This function uses the full TEOS-10 Gibbs function $g(S_A,t,p)$ of IOC et al. (2010), being the sum of the IAPWS-09 and IAPWS-08 Gibbs functions.

One use for this function is in the laboratory where a measured value of the in situ density $\rho$ of a seawater sample may have been made at the laboratory temperature $t$ and at atmospheric pressure $p$. Given knowledge of the sample’s Practical Salinity, the present function will return the Absolute Salinity Anomaly $\delta S_A$ of this seawater sample.

References

