Notes on the function gsw_rho_alpha_beta_CT_exact(SA,CT,p)

This function, **gsw_rho_alpha_beta_CT_exact**(SA,CT,p), evaluates the *in situ* density, the thermal expansion coefficient with respect to constant Conservative Temperature Θ, α^{Θ}, and the saline contraction coefficient at constant Θ, β^{Θ}. 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. This function is simply calls to four other GSW functions as follows,

```
t = gsw_t_from_CT(SA,CT,p);
rho_CT_exact = gsw_rho_t_exact(SA,t,p);
alpha_CT_exact = gsw_alpha_wrt_CT_t_exact(SA,t,p);
beta_CT_exact = gsw_beta_const_CT_t_exact(SA,t,p);
```

Potential density with respect to reference pressure p_r can be evaluated from this function by calling it as follows, **gsw_rho_alpha_beta_CT_exact**(SA,CT,p_ref).

References

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IOC, SCOR and IAPSO, 2010: *The international thermodynamic equation of seawater – 2010: Calculation and use of thermodynamic properties*. Intergovernmental Oceanographic Commission, Manuals and Guides No. 56, UNESCO (English), 196 pp. Available from http://www.TEOS-10.org