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

This function, **gsw_rho_CT_exact**(SA,CT,p), evaluates the *in situ* density for given input values of Absolute Salinity S_A, Conservative Temperature Θ, and pressure p. 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 two calls to other GSW functions, as follows,

```
t = gsw_t_from_CT(SA,CT,p);
rho_CT_exact = gsw_rho_t_exact(SA,t,p);
```

Potential density with respect to reference pressure p_r can be evaluated from this function by calling it with this value of pressure. For example, potential density with respect to $p_r = 2000$ dbar is equal to **gsw_rho_CT_exact**(SA,CT,p_ref) where p_ref is 2000 dbar .

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