

## Notes on the function `gsw_internal_energy_CT_exact(SA,CT,p)`

This function, `gsw_internal_energy_CT_exact(SA,CT,p)`, evaluates the internal energy  $u$  in terms of the input variables Absolute Salinity  $S_A$  Conservative Temperature  $\Theta$  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 calls to two other GSW functions as follows,

```
t = gsw_t_from_CT(SA,CT,p);  
internal_energy_CT_exact = gsw_internal_energy_t_exact(SA,t,p);
```

### References

- IAPWS, 2008: Release on the IAPWS Formulation 2008 for the Thermodynamic Properties of Seawater. The International Association for the Properties of Water and Steam. Berlin, Germany, September 2008, available from [www.iapws.org](http://www.iapws.org). This Release is referred to in the text as **IAPWS-08**.
- IAPWS, 2009: Supplementary Release on a Computationally Efficient Thermodynamic Formulation for Liquid Water for Oceanographic Use. The International Association for the Properties of Water and Steam. Doorwerth, The Netherlands, September 2009, available from <http://www.iapws.org>. This Release is referred to in the text as **IAPWS-09**.
- 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>