Manual for Package: physics
Revision 1

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October 8, 2019

Contents

1 @Constant

1.1 Constant

```
Constant and physical standard quantities
```

1.2 celsius_to_kelvin

```
convert temperature from degree Celsius to Kelvin
function t_K = celsius_to_kelvin(t_C)
```

1.3 depth_to_pressure

```
convert depth to pressure in fresh water at standard temperature

  z = (p - p0)/(rho g)
```

```
=> p = rho g z + p0
```

```
input :
p0 : nx1 or scalar, pressure at water surface in BAR
d  : depth in metre
```

```
output :
p  : nx1, pressure at measurement depth in BAR
```

1.4   kelvin_to_celsius

```
convert temperature degree Kelvin to Celsius
```

1.5   pressure_to_depth

```
convert pressure to depth in fresh water at standard temperature
```

```
z = (p - p0)/(rho*g)
```

```
input:
p  : nx1, pressure at measurement depth in BAR
p0 : nx1 or scalar, pressure at water surface in BAR
```

```
output:
d  : depth in metre
```

1.6   sound_absorption_water

```
sound absrobption in water
following Francois and Garrison, 1982
```

```
function alpha = sound_absorption(f,S,D,T)
```

```
input:
f : frequency (Hz)
S : salinity
D : depth (m)
T : temperature (C)
```

```
output:
alpha = sound attenuation in dB/m (not dB/km)
```

```
function alpha = sound_absorption(f,S,D,T,model)
```

1.7 sound_velocity_water

```
sound velocity in water
following Lubbers and Graaff (1998)
this formula does not include depth and salinity effects
```