

[Help](#)

```
#include "cir1d_std.h"

/*Zero Coupon Bond*/
static int zcb_cir1d(double r0, double k, double t, double sigma, double theta,
{
    double h, A, B;

    /*A,B coefficient*/
    h = sqrt(SQR(k) + 2.*SQR(sigma));
    B = 2.*(exp(h * (T - t)) - 1.) / (2.*h + (k + h) * (exp(h * (T - t)) - 1.));
    A = pow(h * exp(0.5 * (k + h) * (T - t)) / (h + 0.5 * (k + h) * (exp(h * (T -

    /*Price*/
    *price = A * exp(-B * r0);

    return OK;
}

int CALC(CF_ZCBond)(void *Opt, void *Mod, PricingMethod *Met)
{
    TYPEOPT *ptOpt = (TYPEOPT *)Opt;
    TYPEMOD *ptMod = (TYPEMOD *)Mod;

    return zcb_cir1d(ptMod->r0.Val.V_PDOUBLE, ptMod->k.Val.V_DOUBLE, ptMod->T.Val.
}

static int CHK_OPT(CF_ZCBond)(void *Opt, void *Mod)
{
    return strcmp(((Option *)Opt)->Name, "ZeroCouponBond");
}

static int MET(Init)(PricingMethod *Met, Option *Opt)
{
    if (Met->init == 0)
    {
        Met->init = 1;
    }

    return OK;
}
```

```
}
```

```
PricingMethod MET(CF_ZCBond) =  
{  
    "CF_Cir1d_ZCBond",  
    {{ " ", PREMIA_NULLTYPE, {0}, FORBID}},  
    CALC(CF_ZCBond),  
    {{ "Price", DOUBLE, {100}, FORBID}, { " ", PREMIA_NULLTYPE, {0}, FORBID}},  
    CHK_OPT(CF_ZCBond),  
    CHK_ok,  
    MET(Init)  
} ;
```