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#if defined(PremiaCurrentVersion) && PremiaCurrentVersion < (2010+2) //The "#els
#else

#ifndef TreeHW1dGeneralized_H_INCLUDED
#define TreeHW1dGeneralized_H_INCLUDED
#include "math/read_market_zc/InitialYieldCurve.h"

//*****TreeHW1dG structure*****//
typedef struct TreeHW1dG
{
    double Tf;           // Final time of the tree, dt=Tf/Ngrid
    int Ngrid;           // Number of time step in the TreeHW1dG

    PnlVect *t;          // Time step grid, from t[0] to T[Ngrid].
    PnlVectInt *Jminimum; // Jminimum[i] : Minimal index at time i
    PnlVectInt *Jmaximum; // Jmaximum[i] : Maximal index at time i
    PnlVect *alpha;       // Translation from x to r. ( r_t = x_t + alpha_t)
} TreeHW1dG;

//***** Datas specific to Hull and White *****//
typedef struct ModelHW1dG
{
    double MeanReversion;           /*Speed reversion of the Hullwhite m

    PnlVect *TimeGrid;
    PnlVect *ShortRateVolGrid; /*Volatility of the Hullwhite model.*/

} ModelHW1dG;

double Current_VolatilityHW1dG(ModelHW1dG *HW1dG, double t);

void SetTreeHW1dG(TreeHW1dG *Meth, ModelHW1dG *ModelParam, ZCMarketData *ZCMarke

int SetTimeGridHW1dG(TreeHW1dG *Meth, int NbrTimeStep, double T1, double T2);

int SetTimeGrid_TenorHW1dG(TreeHW1dG *Meth, int NtY, double T0, double S0, doubl

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void BackwardIterationHW1dG(TreeHW1dG *Meth, ModelHW1dG *ModelParam, PnlVect *Op
double SpaceStepHW1dG(double delta_t, double sigma); // Renvoie Delta_x(i)
double ProbaUpHW1dG(int j, int k, double delta_t2, double beta_x, double mean_re
double ProbaMiddleHW1dG(int j, int k, double delta_t2, double beta_x, double mea
double ProbaDownHW1dG(int j, int k, double delta_t2, double beta_x, double mean_
int IndexTimeHW1dG(TreeHW1dG *Meth, double s); // To locate the date s inf the t
int DeleteTimegridHW1dG(struct TreeHW1dG *Meth);
int DeleteTreeHW1dG(struct TreeHW1dG *Meth);
int DeletModelHW1dG(struct ModelHW1dG *HW1dG);

#endif // TreeHW1dGeneralized_H_INCLUDED
#endif //PremiaCurrentVersion

```