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# hw1d

## 1 Description

The model is defined by

$$\begin{aligned} dS_t &= (r - q)S_t dt + \sqrt{\sigma_t} S_t dW_t^1, \\ d\sigma_t &= \nu \sigma_t dt + \zeta \sigma_t dW_t^2, \end{aligned}$$

where  $W^1$  and  $W^2$  are two correlated Brownian motions with  $\langle W^1, W^2 \rangle_t = \rho t$ .

## 2 Code Implementation

```
#ifndef _HW1D_H
#define _HW1D_H

#include "optype.h"
#include "var.h"

#define TYPEMOD HW1D

/*1D HULL-WHITE World*/
typedef struct TYPEMOD
{
    VAR T;
    VAR S0;
    VAR Divid;
    VAR R;
    VAR Sigma0;
    VAR Mean;
    VAR Sigma;
    VAR Rho;
}
```

```
} TYPEMOD;
```

```
#endif
```