**Intensive PhD Course on**

# Finite Difference Methods for Finance Problems

**The Danish Doctoral School of Finance**
**Wed.-Fri. October 6-8, 2010 at Copenhagen Business School**

**Teacher**: Jesper Andreasen (head quant at Danske Bank.)

**Course contents**:

1-dim PDEs:

- Theta method (explicit, implicit, Crank-Nicolson.)
- Dimensioning of FD grids.
- Boundary conditions.
- Stability and convergence.
- Variable transforms.
- Barrier options.

2-3 dim PDEs:

- ADI methods.
- Coordinate transforms, correlation and predictor-corrector methods.

Applications and examples:

- Forward/backward equations and Dupire's local volatility model.
- Penta-diagonal schemes and Cheyette models.
- MC simulation in finite difference schemes.
- Jump-diffusion models.
- Bellman problems: passport options, uncertain volatility, feedback models.

**Course load**: 2.5 ECTS.

**Prerequisites**: Some knowledge of continuous-time finance.

**Literature**: Notes and articles.

**Participants**: PhD-students from Nordic universities participate for free. All others: Contact Rolf Poulsen.

**Registration**: Send an email to Rolf Poulsen (rolf@math.ku.dk) no later than September 1, 2010.