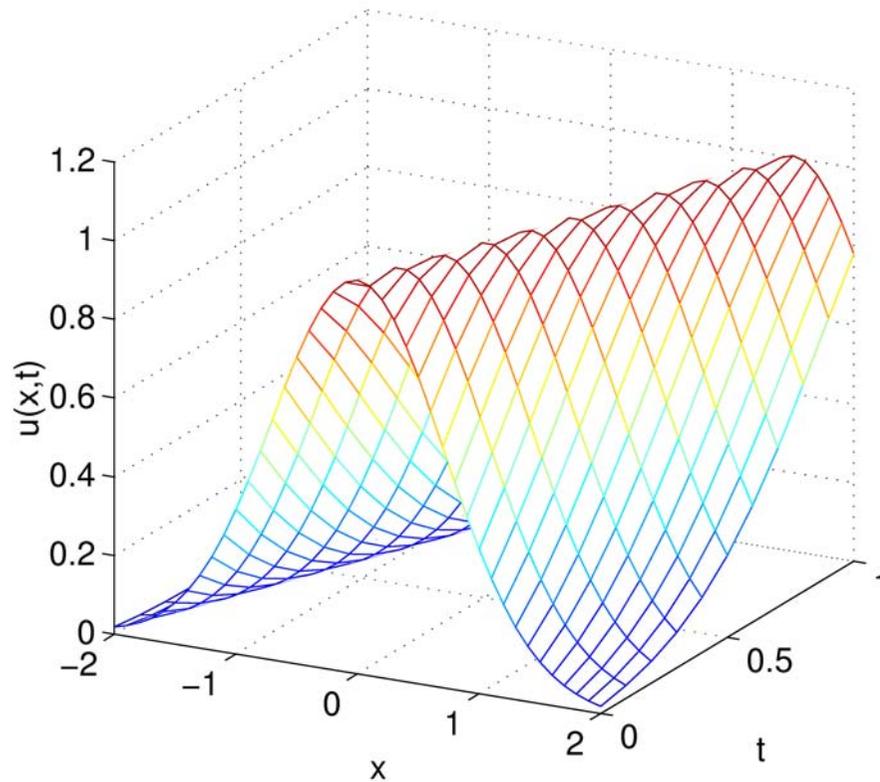
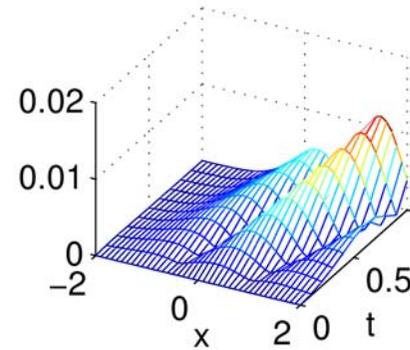


Bemerkung 3.15: Differenzenverfahren $u_t + cu_x = f$

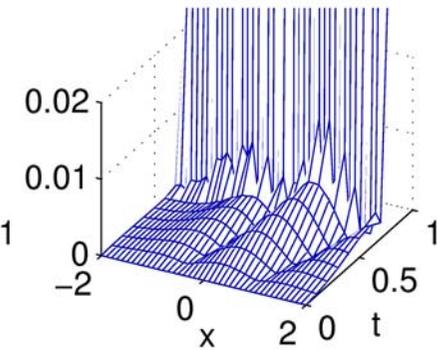
$$u_t + 1.5 u_x = 0, \quad u(x,0) = \exp(-x^2) \quad (\text{Euler})$$



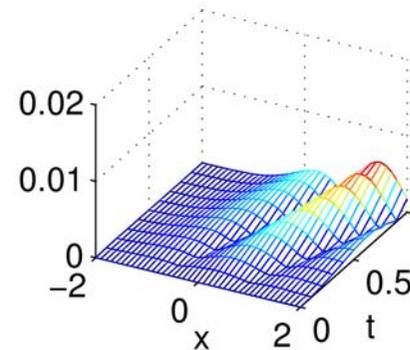
$$h = 1/50, \tau = 1/200$$



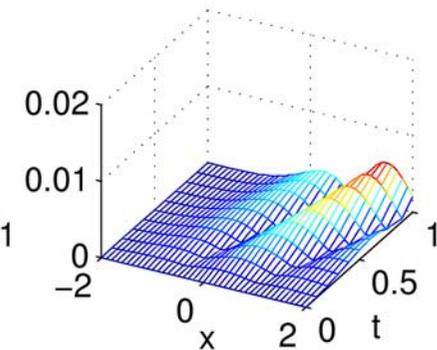
$$h = 1/100, \tau = 1/200$$



$$h = 1/50, \tau = 1/400$$

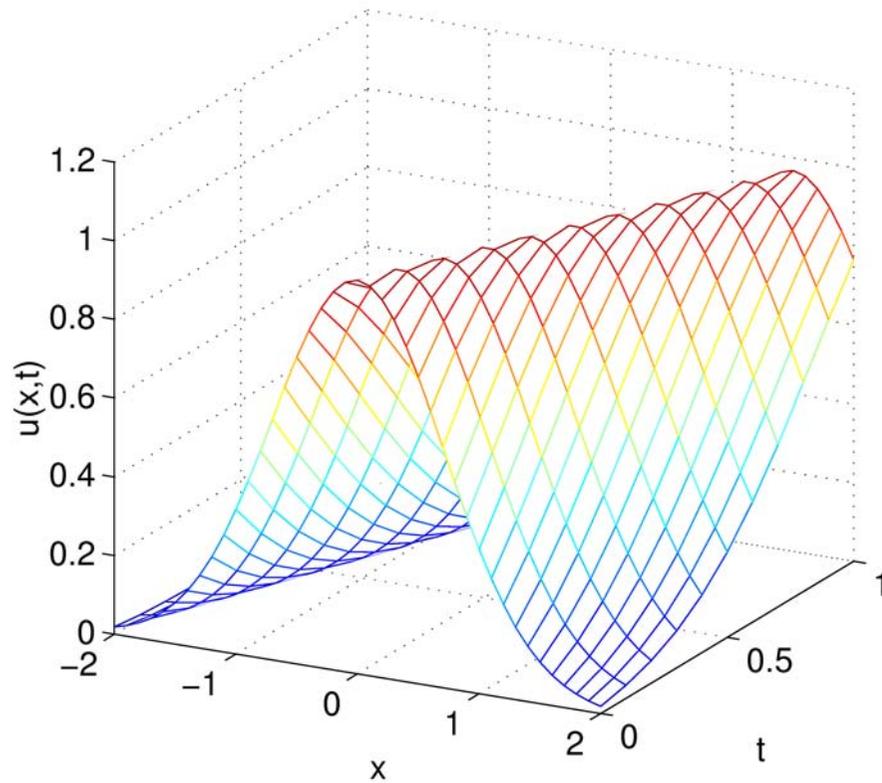


$$h = 1/100, \tau = 1/400$$

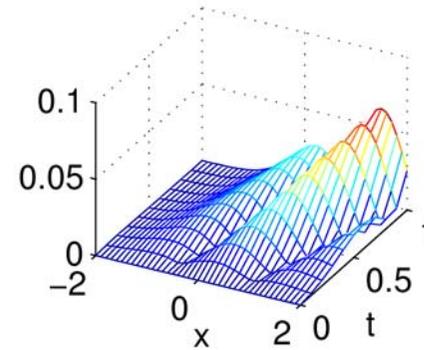


Bemerkung 3.15: Differenzenverfahren $u_t + cu_x = f$ (II)

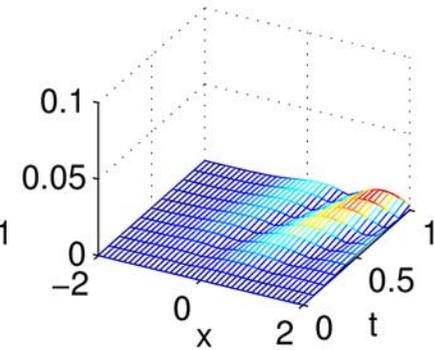
$$u_t + 1.5 u_x = 0, \quad u(x,0) = \exp(-x^2) \quad (\text{Lax-Friedrichs})$$



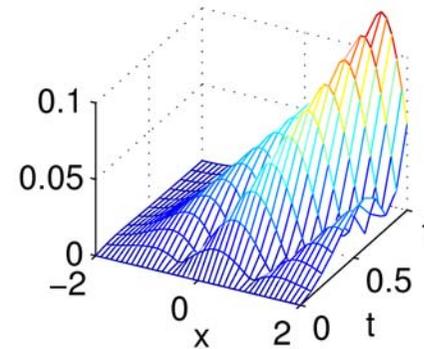
$$h = 1/50, \tau = 1/200$$



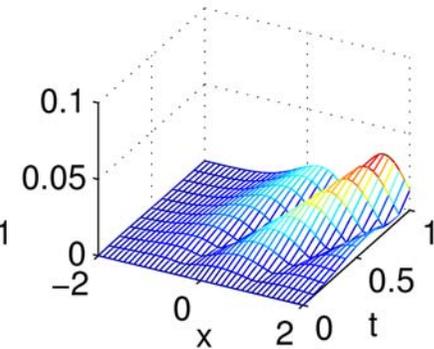
$$h = 1/100, \tau = 1/200$$



$$h = 1/50, \tau = 1/400$$

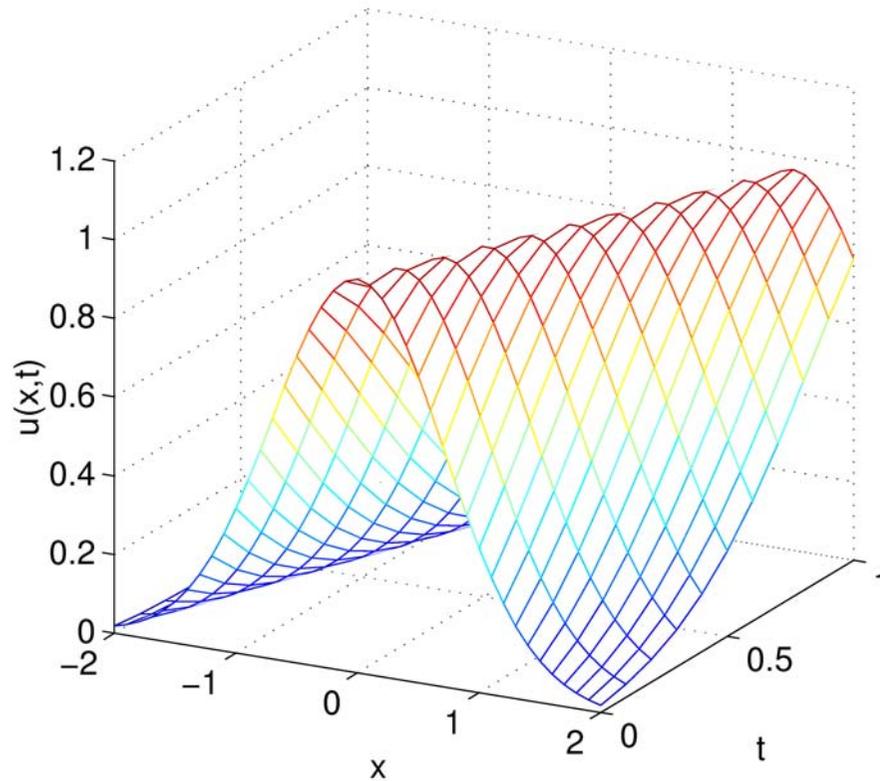


$$h = 1/100, \tau = 1/400$$

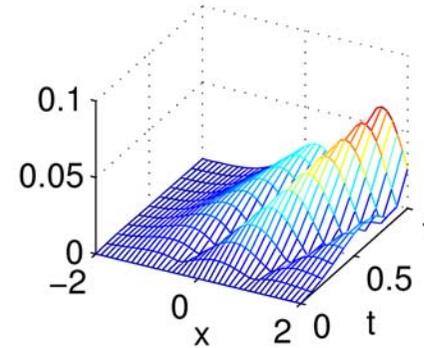


Bemerkung 3.15: Differenzenverfahren $u_t + cu_x = f$ (III)

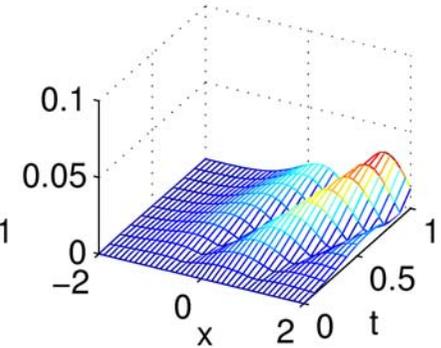
$$u_t + 1.5 u_x = 0, \quad u(x,0) = \exp(-x^2) \quad (\text{Lax-Friedrichs})$$



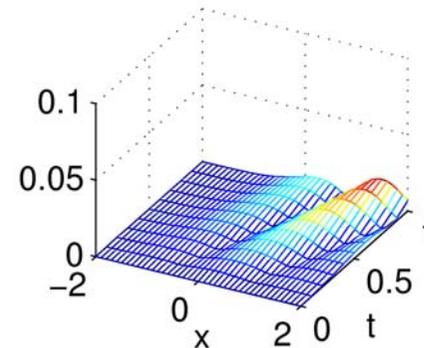
$$h = 1/50, \tau = 1/200$$



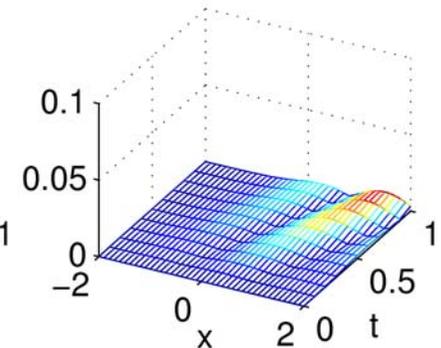
$$h = 1/100, \tau = 1/400$$



$$h = 1/200, \tau = 1/800$$

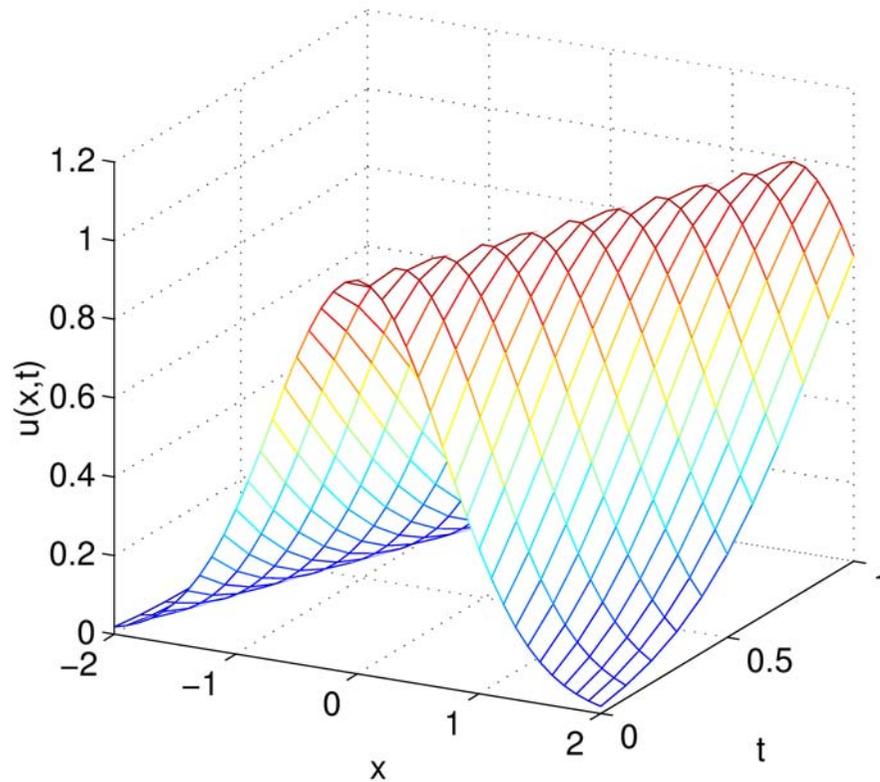


$$h = 1/400, \tau = 1/1600$$

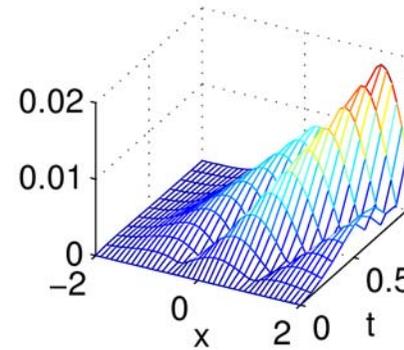


Bemerkung 3.15: Differenzenverfahren $u_t + cu_x = f$ (IV)

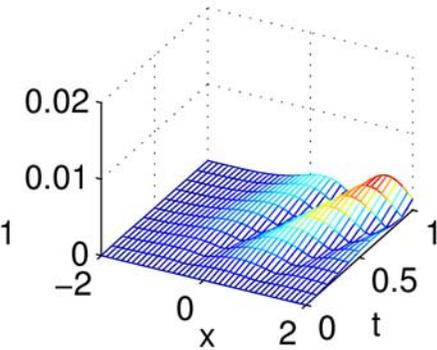
$u_t + 1.5 u_x = 0, \quad u(x,0) = \exp(-x^2)$ (Upwind)



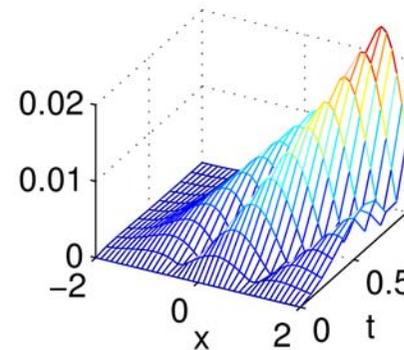
$h = 1/50, \tau = 1/200$



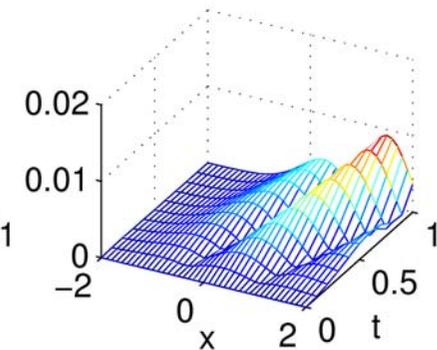
$h = 1/100, \tau = 1/200$



$h = 1/50, \tau = 1/400$

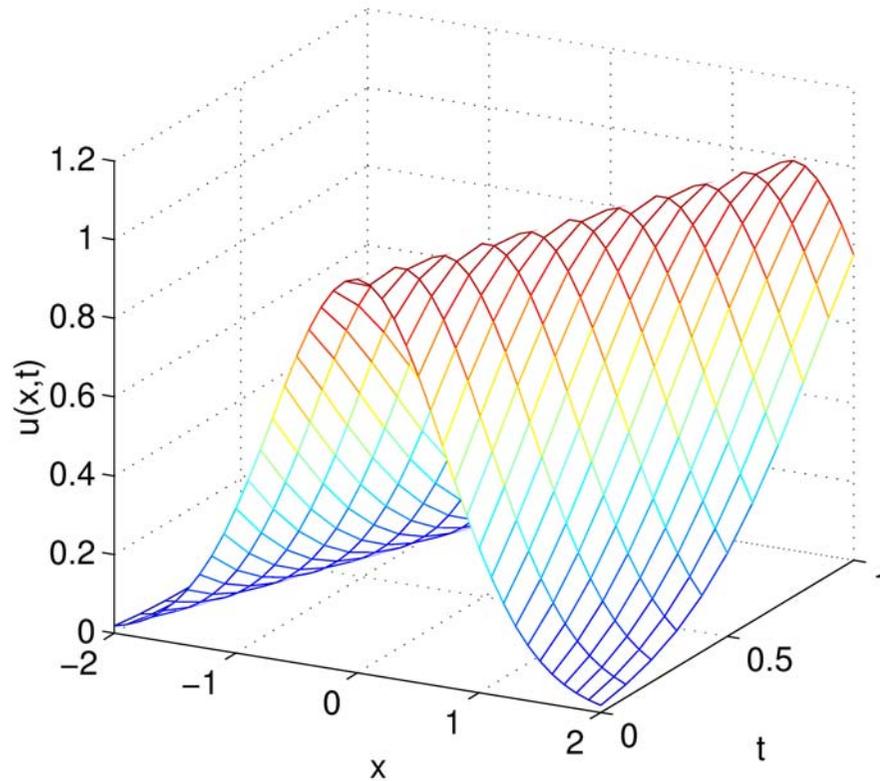


$h = 1/100, \tau = 1/400$

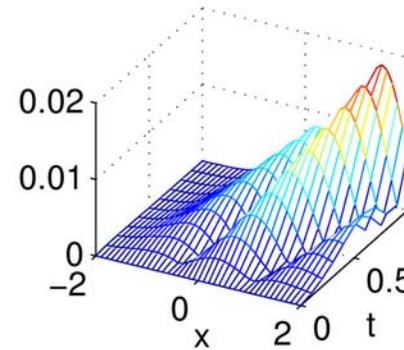


Bemerkung 3.15: Differenzenverfahren $u_t + cu_x = f$ (V)

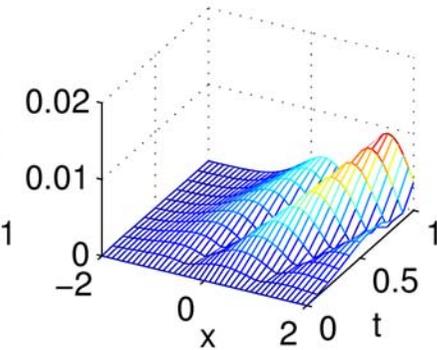
$$u_t + 1.5 u_x = 0, \quad u(x,0) = \exp(-x^2) \quad (\text{Upwind})$$



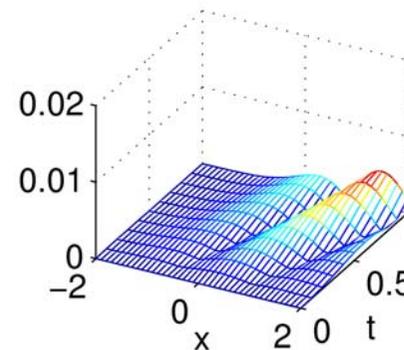
$$h = 1/50, \tau = 1/200$$



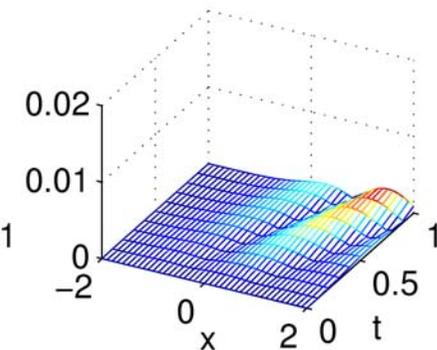
$$h = 1/100, \tau = 1/400$$



$$h = 1/200, \tau = 1/800$$

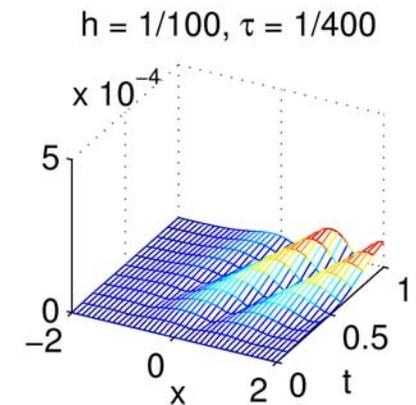
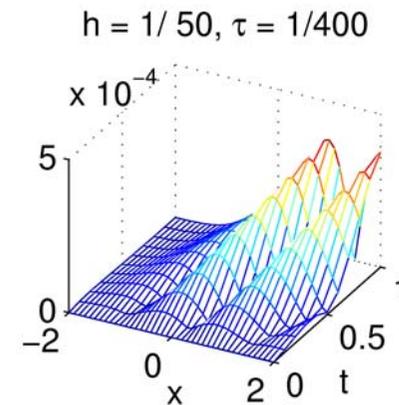
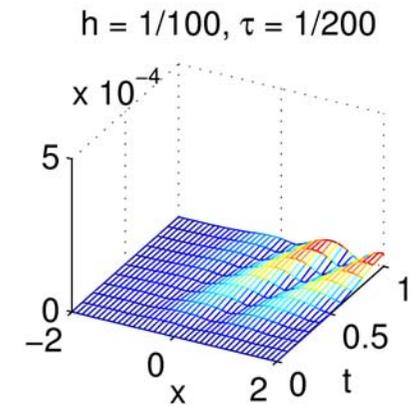
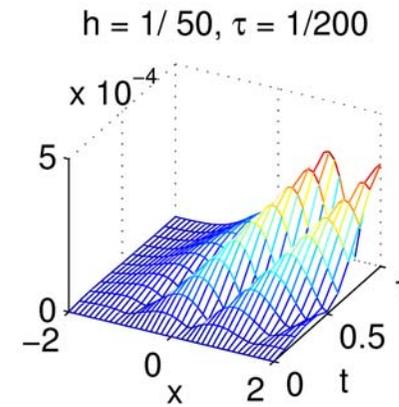
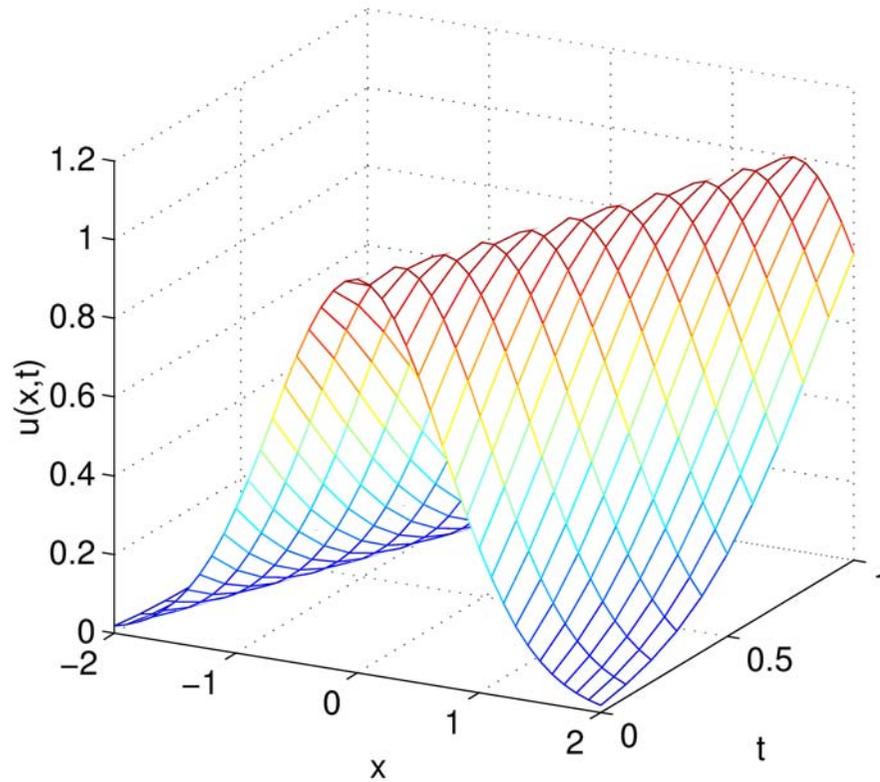


$$h = 1/400, \tau = 1/1600$$



Bemerkung 3.15: Differenzenverfahren $u_t + cu_x = f$ (VI)

$$u_t + 1.5 u_x = 0, \quad u(x,0) = \exp(-x^2) \quad (\text{Lax-Wendroff})$$



Bemerkung 3.15: Differenzenverfahren $u_t + cu_x = f$ (VII)

$$u_t + 1.5 u_x = 0, \quad u(x,0) = \exp(-x^2) \quad (\text{Lax-Wendroff})$$

