

$$\mathbb{H} \left[\frac{\partial g_i}{\partial t_k} g_j(t) + g_i \frac{\partial g_j(t)}{\partial t_k} + \frac{\partial g_i}{\partial t_k} \frac{\partial g_j}{\partial t_k} + \frac{\partial g_i}{\partial t_k} \frac{\partial g_j}{\partial t_k} \right] = 0$$

$$\begin{pmatrix} I & I-p \\ I & I \end{pmatrix}$$

$$(I-p) \left((I-p) - I(I-p) \right)$$

$$\begin{pmatrix} I & I-(s-t)^2 B & I-(r-t)^2 C \\ I-(s-t)^2 B & I & I-(s-r)^2 D \\ I-(r-t)^2 C & I & I \end{pmatrix}$$

\uparrow
 $I-(s-r)^2 D$
 $-2(s-r)^2 D$

$$\det(I - (s-r)^2 D) \cdot (I - (s-t)^2 B) \left((I - (s-t)^2 B)(I - (s-r)^2 D) - I(I - (r-t)^2 C) \right)$$

$$= (I - (s-t)^2 B) \left(I - (s-t)^2 B - (s-r)^2 D \right) - I + (r-t)^2 C$$