Comments to some details in (web version 2010 of)

"*Topics on Extraction of Ocean-wave Energy: Various leftover lecture notes*", May 2002.

with reference to certain parts of *Ocean Waves and Oscillating Systems* (OWOS).

Pages 81 to 82: Comment: The section "K.5. Two-dimensional radiation damping matrix" represents an extension of OWOS matter in Section 5.8 (OWOS pp. 179-181) to the case with OWCs included in the system of oscillators, in addition to the oscillating bodies.

Note also that the results of section "K.5. Two-dimensional radiation damping matrix" could have been obtained by application of OWOS matter in Section 7.2 for the two-dimensional case.

Page 82: Note that the equation on the first line of page 82 is an extension of OWOS eq. (5.301) to the case with OWCs included in the system of oscillators, in addition to the oscillating bodies.

Thus eq. [P79] is an extension of an equation that would have resulted if the h'-s in eq. (5.301) were expressed by the f'-s by using eqs. (5.304) and (5.305). The last equation in section K.5 follows from eq (7.196) in OWOS.

Pages 68-103: Comment on notation. Comparison of matrices $\boldsymbol{\upsilon}$, $\boldsymbol{\pi}$ and $\boldsymbol{\Delta}$ in OWOS, Section 7.2, with corresponding matrices $\boldsymbol{\kappa}$, $\boldsymbol{\pi}$ and $\boldsymbol{\Delta}$ in chapter K (pages 68-103 of "Topics - - -"), where matrices are not denoted by bold-face symbols, but by a tilde ($\sim$) below symbols κ, π and Δ (while transposed matrices are denoted by placing the tilde above symbols):

In OWOS, eq. (7.101) defines the N-dimensional column vectors $\hat{\boldsymbol{\upsilon}} = \begin{pmatrix} \hat{\mathbf{u}} \\ -\hat{\mathbf{p}} \end{pmatrix}$ and $\hat{\boldsymbol{\kappa}} = \begin{pmatrix} \hat{\mathbf{F}} \\ -\hat{\mathbf{Q}} \end{pmatrix}$ and eq. (7.91) the N-dimensional square matrix $\boldsymbol{\Delta} = \begin{pmatrix} \mathbf{R} & -i\mathbf{J} \\ i\mathbf{J}^{\mathrm{T}} & \mathbf{G} \end{pmatrix}$. Here the oscillating-body variables appear before the OWC variables.

In contrast, in chapter K (pp. 68-103) the corresponding matrices used are defined as $\hat{\boldsymbol{\pi}} = \begin{pmatrix} \hat{\mathbf{p}} \\ \hat{\mathbf{u}} \end{pmatrix}$, $\hat{\boldsymbol{\kappa}} = \begin{pmatrix} \hat{\mathbf{Q}} \\ \hat{\mathbf{F}} \end{pmatrix}$ and $\boldsymbol{\Delta} = \begin{pmatrix} \mathbf{G} & -i\mathbf{J} \\ i\mathbf{J}^{\mathrm{T}} & \mathbf{R} \end{pmatrix}$, however using tilde rather than bold face for matrix notation. Observe that not only has the order of $\hat{\mathbf{p}}$ and $\hat{\mathbf{u}}$, respectively of $\hat{\mathbf{Q}}$ and $\hat{\mathbf{F}}$, been interchanged, but also the minus sign have disappeared in the definitions of $\hat{\boldsymbol{\pi}}$, respectively $\hat{\boldsymbol{\kappa}}$.

For information to possibly confused readers: Note on the somewhat awkward labelling of equations in chapter K (pages 68-103):

Let ν be a natural number. When an equation is labelled [Kν], it is the same as equation (Kν) in chapter K of the 1980 lecture notes (Falnes, J. and Iversen, L.C.: *Hydrodynamisk teori for bølgjekraftverk*, Institutt for eksperimentalfysikk, NTH, Universitetet i Trondheim, February 1980).

When an equation is labelled [Lν], it is an (including-OWCs) extension of equation (Kν) in chapter K of these 1980 lecture notes, where only oscillating bodies, and no OWC, were considered in the oscillating system.

When an equation – on pp. 68-103 (but not on pp. 106-111(!)) – is labelled [Tν], it is a similar extension of equation (ν) in the paper: Falnes, J.: Wave-power absorption by an array of attenuators oscillating with unconstrained amplitudes, *Applied Ocean Research*, Vol 6, No 1, pp 16-22, 1984.