

> restart;with(Riemann):with(TensorPack): with(Canon):CDF(0): CDS(index):

Chapter XX Tensor analysis using indices - Senovilla et al. - Shearfree for acceleration parallel to vorticity if  $\sigma_{ab}=0 \Rightarrow \omega \Theta = 0$

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eq74a -  $\omega_{[a,b]} \cdot \text{cod}(-a)$  contraction of SSSeq72

> read "EFE" : read "SFE" :read "fids" :read "Seneqs80" :

from SSSeq72c

> temp := ((-12 \* PU \* p''' + 24 \* p''^2 + 4 \* p') \* Psi^4 + (36 \* p'^3 + 24 \* p'^2) \* Psi^2) \* omega \* omega[-A] \* omega[a, b] = 0 : T(%);  
$$\left( (-12 PU p''' + 24 p''^2 + 4 p') \Psi^4 + (36 p'^3 + 24 p'^2) \Psi^2 \right) \omega \omega_{;a} \omega^{ab} = 0 \quad (1.1)$$

>

so either

> temp1 := op(1, op(1, temp)) = 0 : T(%);  
$$(-12 PU p''' + 24 p''^2 + 4 p') \Psi^4 + (36 p'^3 + 24 p'^2) \Psi^2 = 0 \quad (1.2)$$

OR

> temp2 := op(2, op(1, temp)) \* op(3, op(1, temp)) \* op(4, op(1, temp)) = 0 : T(%);  
$$\omega \omega_{;a} \omega^{ab} = 0 \quad (1.3)$$

which is SSSeq74b

> eq[74 b] := temp2 : T(%);  
$$\omega \omega_{;a} \omega^{ab} = 0 \quad (1.4)$$

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