

23A

$$= \sum_{\bar{c}=0}^{n-1} (-1)^{\bar{c}} h^{\bar{c}, \bar{c}} + \sum_{\bar{c}=0}^{n-2} (-1)^{\bar{c}} h^{\bar{c}, \bar{c}+2} + \dots + \sum_{\bar{c}=0}^0 (-1)^{\bar{c}} h^{\bar{c}, \bar{c}+2n}$$

$$= 2 \left\{ \sum_{\substack{p+q=0 \\ p=0}} (-1)^0 h^{0,0} + \sum_{\substack{p+q=2 \\ p \leq q}} (-1)^p h^{p,q} + \sum_{\substack{p+q=4 \\ p \leq q}} (-1)^p h^{p,q} + \dots + \sum_{\substack{p+q=2n-2 \\ p \leq q}} (-1)^p h^{p,q} \right\}$$

$$= 2 \sum_{\substack{p+q \equiv 0(2) \\ p+q < 2n \\ p \leq q}} (-1)^p h^{p,q}$$

Thus we get
$$I(M) = \sum_{\substack{p+q=2n \\ p \leq q}} (-1)^p h^{p,q} + 2 \sum_{\substack{p+q \equiv 0(2) \\ p+q < 2n \\ p \leq q}} (-1)^p h^{p,q}$$

$$\Rightarrow I(M) = \sum_{\substack{p+q \equiv 0(2) \\ \leq 2n \\ p \leq q}} (-1)^p h^{p,q} + \sum_{\substack{p+q \equiv 0(2) \\ p+q < 2n \\ p \leq q}} (-1)^p h^{p,q}$$

$$\sum_{\substack{p+q \equiv 0(2) \\ p+q < 2n \\ p \leq q}} (-1)^p h^{p,q} = \sum_{\substack{p+q \equiv 0(2) \\ p+q < 2n \\ p \leq q}} (-1)^p h^{2n-p, 2n-q} = \sum_{\substack{x+y \equiv 0(2) \\ x+y > 2n \\ x \geq y}} (-1)^x h^{x,y} \quad \begin{matrix} x=2n-p, y=2n-q \\ \swarrow \end{matrix}$$

$$= \sum_{\substack{x+y \equiv 0(2) \\ x+y > 2n \\ x \geq y}} (-1)^x h^{y,x} = \sum_{\substack{x+y \equiv 0(2) \\ x+y > 2n \\ x \geq y}} (-1)^{2l-y} h^{y,x} = \sum_{\substack{x+y \equiv 0(2) \\ x+y > 2n \\ x \geq y}} (-1)^y h^{y,x} = \sum_{\substack{p+q \equiv 0(2) \\ p+q > 2n \\ p \leq q}} (-1)^p h^{p,q}$$