I 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

n1

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

Rsh1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

I 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

n2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

Rsh2

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

Rs

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

Iph

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

rmsre

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  | FA |  | Fr, FA |  | Fr (F), FA |  | Fr, FA | Fr, FA | Fr, FA | Fr, FA |
| EBLSHADE | Fr, FA, Q (F) | = |  | Fr, FA | + |  | + |  | + | Fr, FA | + | + | + | + |
| ADELI | Fr, FA, Q (F) |  | = | Fr, FA | + |  | + |  | + | Fr, FA | + | + | + | + |
| NDE | Fr, FA |  |  | = | Fr, FA |  | Fr, FA, Q (F) |  | Fr, FA | Fr (F), FA (F) | + | + | + | + |
| MABC |  |  |  |  | = |  | Fr, FA |  | FA |  | Fr, FA | Fr, FA | Fr, FA | Fr, FA |
| TLBO | Fr, FA, Q (F) |  |  | Fr (F), FA | Fr, FA, Q (F) | = | + |  | Fr, FA, Q (F) | Fr, FA | + | + | + | + |
| GOTLBO |  |  |  |  |  |  | = |  |  |  | FA | FA | FA | FA |
| STLBO | Fr, FA, Q (F) |  |  | Fr, FA | + |  | + | = | + | Fr, FA | + | + | + | + |
| PSO |  |  |  |  |  |  | FA |  | = |  | FA | FA | FA | FA |
| IJAYA | FA |  |  |  | Fr (F), FA |  | Fr, FA |  | Fr, FA | = | Fr, FA | Fr, FA | Fr, FA | Fr, FA |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

Complex

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  | FA |  |  | FA | FA | FA |
| EBLSHADE | Fr,FA | = | FA | Fr,FA | Fr,FA | FA | Fr,FA |  | Fr,FA | Fr,FA | Fr,FA | Fr,FA | Fr,FA | Fr,FA |
| ADELI | Fr (Finner)FA |  | = | Fr,FA |  |  |  |  | Fr,FA | Fr,FA | Fr,FA | Fr,FA | Fr,FA | Fr,FA |
| NDE | FA |  |  | = | FA |  | FA |  | FA | FA |  | FA | FA | FA |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  | FA | FA |
| TLBO | Fr(Finner), FA |  |  |  | Fr(Finner, Hochberg), FA | = | Fr,FA |  | Fr,FA | Fr(Finner, Hochberg), FA | Fr,FA | Fr,FA | Fr,FA | Fr,FA |
| GOTLBO |  |  |  |  |  |  | = |  | FA (F) |  |  | FA | FA | FA |
| STLBO | Fr (F), FA |  | FA | FA | Fr,FA | FA | Fr,FA | = | Fr,FA | Fr,FA | Fr,FA | Fr,FA | Fr,FA | Fr,FA |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  | FA |
| IJAYA |  |  |  |  |  |  |  |  | FA | = |  | FA | FA | FA |
| ISCA |  |  |  |  |  |  |  |  | FA |  | = | FA | FA | FA |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |

(I 1, n1, Rsh1, I 2, n2, Rsh2, Rs, Iph, rmsre)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Method | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| DE | = |  |  |  |  |  |  |  |  |  |  |  |  |  |
| EBLSHADE |  | = |  |  |  |  |  |  |  |  |  |  |  |  |
| ADELI |  |  | = |  |  |  |  |  |  |  |  |  |  |  |
| NDE |  |  |  | = |  |  |  |  |  |  |  |  |  |  |
| MABC |  |  |  |  | = |  |  |  |  |  |  |  |  |  |
| TLBO |  |  |  |  |  | = |  |  |  |  |  |  |  |  |
| GOTLBO |  |  |  |  |  |  | = |  |  |  |  |  |  |  |
| STLBO |  |  |  |  |  |  |  | = |  |  |  |  |  |  |
| PSO |  |  |  |  |  |  |  |  | = |  |  |  |  |  |
| IJAYA |  |  |  |  |  |  |  |  |  | = |  |  |  |  |
| ISCA |  |  |  |  |  |  |  |  |  |  | = |  |  |  |
| NNA |  |  |  |  |  |  |  |  |  |  |  | = |  |  |
| CWOA |  |  |  |  |  |  |  |  |  |  |  |  | = |  |
| WW |  |  |  |  |  |  |  |  |  |  |  |  |  | = |