

Results for S instances (1-PDTSP)

Keld Helsgaun, November 19, 2017

| Instance | BKS | LKH-3 | Gap (%) |
|----------|-----|------------|--------------|
| s025b00A | 233 | 233 | 0.00 |
| s025b00B | 255 | 248 | -2.75 |
| s025b00C | 164 | 164 | 0.00 |
| s025b00D | 151 | 151 | 0.00 |
| s025b00E | 152 | 150 | -1.32 |
| s025b00F | 187 | 187 | 0.00 |
| s025b00G | 139 | 139 | 0.00 |
| s025b00H | 139 | 139 | 0.00 |
| s025b00I | 182 | 182 | 0.00 |
| s025b00J | 220 | 220 | 0.00 |
| s050b00A | 227 | 227 | 0.00 |
| s050b00B | 175 | 172 | -1.71 |
| s050b00C | 243 | 243 | 0.00 |
| s050b00D | 159 | 154 | -3.14 |
| s050b00E | 162 | 162 | 0.00 |
| s050b00F | 186 | 186 | 0.00 |
| s050b00G | 178 | 178 | 0.00 |
| s050b00H | 163 | 163 | 0.00 |
| s050b00I | 166 | 166 | 0.00 |
| s050b00J | 137 | 134 | -2.19 |
| s075b00A | 161 | 161 | 0.00 |
| s075b00B | 191 | 191 | 0.00 |
| s075b00C | 162 | 162 | 0.00 |
| s075b00D | 157 | 157 | 0.00 |
| s075b00E | 184 | 184 | 0.00 |
| s075b00F | 160 | 160 | 0.00 |
| s075b00G | 146 | 146 | 0.00 |
| s075b00H | 172 | 172 | 0.00 |
| s075b00I | 175 | 175 | 0.00 |
| s075b00J | 181 | 180 | -0.55 |
| s100b00A | 128 | 128 | 0.00 |
| s100b00B | 203 | 203 | 0.00 |
| s100b00C | 162 | 162 | 0.00 |
| s100b00D | 144 | 144 | 0.00 |
| s100b00E | 142 | 142 | 0.00 |
| s100b00F | 182 | 182 | 0.00 |
| s100b00G | 139 | 139 | 0.00 |
| s100b00H | 164 | 164 | 0.00 |
| s100b00I | 190 | 190 | 0.00 |
| s100b00J | 161 | 161 | 0.00 |
| s150b00A | 129 | 129 | 0.00 |

| | | | |
|----------|-----|------------|--------------|
| s150b00B | 134 | <i>136</i> | <i>1.49</i> |
| s150b00C | 161 | 161 | 0.00 |
| s150b00D | 110 | 110 | 0.00 |
| s150b00E | 134 | <i>135</i> | <i>0.75</i> |
| s150b00F | 135 | <i>137</i> | 1.48 |
| s150b00G | 114 | 114 | 0.00 |
| s150b00H | 143 | <i>144</i> | <i>0.70</i> |
| s150b00I | 109 | <i>111</i> | <i>1.83</i> |
| s150b00J | 104 | 104 | 0.00 |
| s200b00A | 129 | 129 | 0.00 |
| s200b00B | 109 | <i>113</i> | <i>3.67</i> |
| s200b00C | 141 | <i>145</i> | <i>2.84</i> |
| s200b00D | 115 | <i>118</i> | <i>2.61</i> |
| s200b00E | 107 | <i>111</i> | <i>3.74</i> |
| s200b00F | 110 | <i>111</i> | <i>0.91</i> |
| s200b00G | 100 | <i>103</i> | <i>3.00</i> |
| s200b00H | 116 | <i>118</i> | <i>1.72</i> |
| s200b00I | 131 | <i>135</i> | <i>3.05</i> |
| s200b00J | 98 | <i>102</i> | <i>4.08</i> |
| s025b05A | 233 | 233 | 0.00 |
| s025b05B | 255 | 248 | -2.75 |
| s025b05C | 172 | 172 | 0.00 |
| s025b05D | 159 | 159 | 0.00 |
| s025b05E | 152 | 152 | 0.00 |
| s025b05F | 189 | 189 | 0.00 |
| s025b05G | 143 | 143 | 0.00 |
| s025b05H | 139 | 139 | 0.00 |
| s025b05I | 182 | 182 | 0.00 |
| s025b05J | 220 | 220 | 0.00 |
| s050b05A | 227 | 227 | 0.00 |
| s050b05B | 175 | 174 | -0.57 |
| s050b05C | 243 | 243 | 0.00 |
| s050b05D | 159 | 158 | -0.63 |
| s050b05E | 164 | 164 | 0.00 |
| s050b05F | 186 | 186 | 0.00 |
| s050b05G | 178 | 178 | 0.00 |
| s050b05H | 163 | 163 | 0.00 |
| s050b05I | 166 | 166 | 0.00 |
| s050b05J | 138 | 135 | -2.17 |
| s075b05A | 163 | 163 | 0.00 |
| s075b05B | 193 | 193 | 0.00 |
| s075b05C | 162 | 162 | 0.00 |
| s075b05D | 157 | 157 | 0.00 |
| s075b05E | 184 | 184 | 0.00 |
| s075b05F | 164 | 164 | 0.00 |
| s075b05G | 146 | 146 | 0.00 |

| | | | |
|----------|-----|------------|--------------|
| s075b05H | 172 | 172 | 0.00 |
| s075b05I | 175 | 175 | 0.00 |
| s075b05J | 182 | 180 | -1.10 |
| s100b05A | 130 | 130 | 0.00 |
| s100b05B | 203 | 203 | 0.00 |
| s100b05C | 162 | 162 | 0.00 |
| s100b05D | 144 | <i>145</i> | <i>0.69</i> |
| s100b05E | 142 | 142 | 0.00 |
| s100b05F | 183 | 183 | 0.00 |
| s100b05G | 139 | <i>140</i> | <i>0.72</i> |
| s100b05H | 171 | <i>172</i> | <i>0.58</i> |
| s100b05I | 190 | <i>191</i> | <i>0.53</i> |
| s100b05J | 161 | <i>162</i> | <i>0.62</i> |
| s150b05A | 129 | <i>130</i> | <i>0.78</i> |
| s150b05B | 135 | <i>136</i> | <i>0.74</i> |
| s150b05C | 161 | <i>162</i> | <i>0.62</i> |
| s150b05D | 110 | <i>111</i> | <i>0.91</i> |
| s150b05E | 134 | 134 | 0.00 |
| s150b05F | 136 | <i>137</i> | <i>0.74</i> |
| s150b05G | 114 | <i>116</i> | <i>1.75</i> |
| s150b05H | 143 | 143 | 0.00 |
| s150b05I | 110 | <i>115</i> | <i>4.55</i> |
| s150b05J | 107 | 110 | 2.80 |
| s200b05A | 129 | <i>136</i> | <i>5.43</i> |
| s200b05B | 109 | 113 | <i>3.67</i> |
| s200b05C | 142 | 144 | <i>1.41</i> |
| s200b05D | 115 | 119 | <i>3.48</i> |
| s200b05E | 107 | 109 | <i>1.87</i> |
| s200b05F | 110 | 112 | <i>1.82</i> |
| s200b05G | 100 | 104 | <i>4.00</i> |
| s200b05H | 116 | 120 | <i>3.45</i> |
| s200b05I | 131 | 135 | <i>3.05</i> |
| s200b05J | 98 | 101 | <i>3.06</i> |
| s025b10A | 233 | 233 | 0.00 |
| s025b10B | 248 | 248 | 0.00 |
| s025b10C | 172 | 172 | 0.00 |
| s025b10D | 159 | 159 | 0.00 |
| s025b10E | 152 | 152 | 0.00 |
| s025b10F | 198 | 189 | -4.55 |
| s025b10G | 146 | 143 | -2.05 |
| s025b10H | 141 | 139 | -1.42 |
| s025b10I | 182 | 182 | 0.00 |
| s025b10J | 220 | 220 | 0.00 |
| s050b10A | 229 | 229 | 0.00 |
| s050b10B | 175 | 175 | 0.00 |
| s050b10C | 248 | 248 | 0.00 |

| | | | |
|----------|-----|------------|--------------|
| s050b10D | 159 | 158 | -0.63 |
| s050b10E | 164 | 164 | 0.00 |
| s050b10F | 186 | 186 | 0.00 |
| s050b10G | 179 | 179 | 0.00 |
| s050b10H | 164 | 164 | 0.00 |
| s050b10I | 172 | 172 | 0.00 |
| s050b10J | 138 | 138 | 0.00 |
| s075b10A | 165 | 165 | 0.00 |
| s075b10B | 193 | 193 | 0.00 |
| s075b10C | 168 | 168 | 0.00 |
| s075b10D | 158 | 158 | 0.00 |
| s075b10E | 184 | 184 | 0.00 |
| s075b10F | 165 | 165 | 0.00 |
| s075b10G | 146 | 146 | 0.00 |
| s075b10H | 172 | 172 | 0.00 |
| s075b10I | 176 | 176 | 0.00 |
| s075b10J | 183 | 183 | 0.00 |
| s100b10A | 131 | 131 | 0.00 |
| s100b10B | 203 | 203 | 0.00 |
| s100b10C | 162 | 162 | 0.00 |
| s100b10D | 145 | 145 | 0.00 |
| s100b10E | 143 | 143 | 0.00 |
| s100b10F | 183 | 183 | 0.00 |
| s100b10G | 139 | 139 | 0.00 |
| s100b10H | 171 | 171 | 0.00 |
| s100b10I | 190 | 190 | 0.00 |
| s100b10J | 161 | 161 | 0.00 |
| s150b10A | 129 | <i>130</i> | <i>0.78</i> |
| s150b10B | 135 | <i>137</i> | <i>1.48</i> |
| s150b10C | 161 | <i>162</i> | <i>0.62</i> |
| s150b10D | 110 | <i>111</i> | <i>0.91</i> |
| s150b10E | 135 | <i>138</i> | <i>2.22</i> |
| s150b10F | 136 | <i>138</i> | <i>1.47</i> |
| s150b10G | 114 | <i>115</i> | <i>0.88</i> |
| s150b10H | 143 | <i>145</i> | <i>1.40</i> |
| s150b10I | 110 | <i>112</i> | <i>1.82</i> |
| s150b10J | 107 | <i>109</i> | <i>1.87</i> |
| s200b10A | 129 | <i>132</i> | <i>2.33</i> |
| s200b10B | 109 | <i>111</i> | <i>1.83</i> |
| s200b10C | 142 | <i>145</i> | <i>2.11</i> |
| s200b10D | 115 | <i>118</i> | <i>2.61</i> |
| s200b10E | 107 | <i>110</i> | <i>2.80</i> |
| s200b10F | 110 | <i>113</i> | <i>2.73</i> |
| s200b10G | 100 | <i>103</i> | <i>3.00</i> |
| s200b10H | 117 | <i>120</i> | <i>2.56</i> |
| s200b10I | 132 | <i>133</i> | <i>0.76</i> |

| | | | |
|----------|-----|------------|--------------|
| s200b10J | 98 | <i>102</i> | <i>4.08</i> |
| s025b20A | 233 | 233 | 0.00 |
| s025b20B | 268 | 260 | -2.99 |
| s025b20C | 164 | 164 | 0.00 |
| s025b20D | 159 | 159 | 0.00 |
| s025b20E | 152 | 152 | 0.00 |
| s025b20F | 198 | 198 | 0.00 |
| s025b20G | 145 | 145 | 0.00 |
| s025b20H | 141 | 141 | 0.00 |
| s025b20I | 188 | 188 | 0.00 |
| s025b20J | 220 | 220 | 0.00 |
| s050b20A | 229 | 229 | 0.00 |
| s050b20B | 175 | 175 | 0.00 |
| s050b20C | 248 | 248 | 0.00 |
| s050b20D | 159 | 158 | -0.63 |
| s050b20E | 164 | 164 | 0.00 |
| s050b20F | 186 | 186 | 0.00 |
| s050b20G | 181 | 181 | 0.00 |
| s050b20H | 164 | 164 | 0.00 |
| s050b20I | 172 | 172 | 0.00 |
| s050b20J | 138 | 138 | 0.00 |
| s075b20A | 168 | 168 | 0.00 |
| s075b20B | 193 | 193 | 0.00 |
| s075b20C | 166 | 166 | 0.00 |
| s075b20D | 159 | 159 | 0.00 |
| s075b20E | 184 | 184 | 0.00 |
| s075b20F | 165 | 165 | 0.00 |
| s075b20G | 146 | 146 | 0.00 |
| s075b20H | 172 | 172 | 0.00 |
| s075b20I | 181 | 181 | 0.00 |
| s075b20J | 183 | 183 | 0.00 |
| s100b20A | 129 | 129 | 0.00 |
| s100b20B | 203 | 203 | 0.00 |
| s100b20C | 162 | 162 | 0.00 |
| s100b20D | 150 | 150 | 0.00 |
| s100b20E | 142 | <i>143</i> | <i>0.70</i> |
| s100b20F | 183 | 183 | 0.00 |
| s100b20G | 139 | 139 | 0.00 |
| s100b20H | 171 | 171 | 0.00 |
| s100b20I | 190 | 190 | 0.00 |
| s100b20J | 161 | 161 | 0.00 |
| s150b20A | 129 | <i>131</i> | <i>1.55</i> |
| s150b20B | 135 | <i>137</i> | <i>1.48</i> |
| s150b20C | 161 | 161 | 0.00 |
| s150b20D | 110 | <i>111</i> | <i>0.91</i> |
| s150b20E | 135 | <i>137</i> | <i>1.48</i> |

| | | | |
|----------|-----|------------|--------------|
| s150b20F | 136 | <i>138</i> | <i>1.47</i> |
| s150b20G | 114 | <i>115</i> | <i>0.88</i> |
| s150b20H | 143 | <i>145</i> | <i>1.40</i> |
| s150b20I | 111 | <i>112</i> | <i>0.90</i> |
| s150b20J | 108 | <i>110</i> | <i>1.85</i> |
| s200b20A | 129 | <i>132</i> | <i>2.33</i> |
| s200b20B | 109 | <i>113</i> | <i>3.67</i> |
| s200b20C | 142 | <i>144</i> | <i>1.41</i> |
| s200b20D | 115 | <i>119</i> | <i>3.48</i> |
| s200b20E | 107 | <i>110</i> | <i>2.80</i> |
| s200b20F | 110 | <i>113</i> | <i>2.73</i> |
| s200b20G | 100 | <i>106</i> | <i>6.00</i> |
| s200b20H | 117 | <i>121</i> | <i>3.42</i> |
| s200b20I | 135 | <i>137</i> | <i>1.48</i> |
| s200b20J | 98 | <i>100</i> | <i>2.04</i> |
| s025binA | 250 | 250 | 0.00 |
| s025binB | 268 | 268 | 0.00 |
| s025binC | 174 | 174 | 0.00 |
| s025binD | 151 | 150 | -0.66 |
| s025binE | 152 | 152 | 0.00 |
| s025binF | 187 | 187 | 0.00 |
| s025binG | 143 | 143 | 0.00 |
| s025binH | 139 | 139 | 0.00 |
| s025binI | 187 | 187 | 0.00 |
| s025binJ | 220 | 220 | 0.00 |
| s050binA | 228 | 228 | 0.00 |
| s050binB | 177 | 177 | 0.00 |
| s050binC | 246 | 246 | 0.00 |
| s050binD | 162 | 162 | 0.00 |
| s050binE | 164 | 164 | 0.00 |
| s050binF | 190 | 190 | 0.00 |
| s050binG | 184 | 184 | 0.00 |
| s050binH | 163 | 163 | 0.00 |
| s050binI | 167 | 167 | 0.00 |
| s050binJ | 138 | 138 | 0.00 |
| s075binA | 164 | 164 | 0.00 |
| s075binB | 193 | 193 | 0.00 |
| s075binC | 162 | 162 | 0.00 |
| s075binD | 160 | 160 | 0.00 |
| s075binE | 185 | 185 | 0.00 |
| s075binF | 160 | 160 | 0.00 |
| s075binG | 147 | 147 | 0.00 |
| s075binH | 172 | 172 | 0.00 |
| s075binI | 177 | 177 | 0.00 |
| s075binJ | 182 | 182 | 0.00 |
| s100binA | 129 | 129 | 0.00 |

| | | | |
|----------|-----|-----|------|
| s100binB | 206 | 207 | 0.49 |
| s100binC | 162 | 162 | 0.00 |
| s100binD | 144 | 144 | 0.00 |
| s100binE | 142 | 142 | 0.00 |
| s100binF | 182 | 182 | 0.00 |
| s100binG | 139 | 139 | 0.00 |
| s100binH | 168 | 168 | 0.00 |
| s100binI | 193 | 193 | 0.00 |
| s100binJ | 161 | 161 | 0.00 |
| s150binA | 129 | 129 | 0.00 |
| s150binB | 135 | 135 | 0.00 |
| s150binC | 161 | 161 | 0.00 |
| s150binD | 112 | 112 | 0.00 |
| s150binE | 134 | 134 | 0.00 |
| s150binF | 137 | 137 | 0.00 |
| s150binG | 115 | 115 | 0.00 |
| s150binH | 144 | 144 | 0.00 |
| s150binI | 110 | 110 | 0.00 |
| s150binJ | 111 | 111 | 0.00 |
| s200binA | 129 | 129 | 0.00 |
| s200binB | 111 | 111 | 0.00 |
| s200binC | 141 | 141 | 0.00 |
| s200binD | 115 | 115 | 0.00 |
| s200binE | 107 | 107 | 0.00 |
| s200binF | 110 | 110 | 0.00 |
| s200binG | 101 | 101 | 0.00 |
| s200binH | 117 | 117 | 0.00 |
| s200binI | 133 | 133 | 0.00 |
| s200binJ | 98 | 98 | 0.00 |