**20150611-hybrid\_GA\_fminsearch\_wings\_morphology\_6-结果**

Starting matlabpool using the 'local' configuration ... connected to 8 labs.

Best Mean Stall

Generation f-count f(x) f(x) Generations

1 200 4478 1.635e+005 0

2 300 2482 6.025e+010 0

3 400 334 2.861e+006 0

4 500 334 1.441e+010 0

5 600 18.34 7.049e+007 0

6 700 18.34 6.408e+006 1

7 800 18.34 4.8e+005 2

8 900 18.34 1.827e+005 3

9 1000 18.34 1.239e+006 4

10 1100 18.34 1.222e+006 5

11 1200 15.56 5.836e+005 0

12 1300 15.56 7689 1

13 1400 14.82 2.221e+004 0

14 1500 14.82 2.253e+004 1

15 1600 14.82 1.925e+009 2

16 1700 14.82 6527 3

17 1800 14.82 6303 0

18 1900 14.82 7662 1

19 2000 14.82 3577 2

20 2100 14.82 3409 3

21 2200 14.82 3781 4

22 2300 14.82 4461 5

23 2400 14.82 5277 6

24 2500 14.82 9268 7

25 2600 14.82 4354 8

26 2700 14.82 4728 9

27 2800 14.82 5192 10

28 2900 14.82 4654 11

29 3000 14.82 3844 12

30 3100 14.82 3595 13

31 3200 14.82 3586 14

32 3300 14.82 4212 15

33 3400 14.82 4.825e+005 16

34 3500 14.82 5024 17

35 3600 14.82 3616 18

36 3700 14.82 3665 19

37 3800 14.82 2918 20

38 3900 14.82 3425 21

39 4000 14.82 3646 22

40 4100 14.82 2914 23

41 4200 14.82 3216 24

42 4300 14.82 2955 25

43 4400 14.82 2778 26

44 4500 14.82 3002 27

45 4600 14.82 2895 28

46 4700 14.82 2571 29

47 4800 14.82 2651 30

48 4900 14.82 2702 31

49 5000 14.82 2464 32

50 5100 14.82 2498 33

51 5200 14.82 2453 34

52 5300 14.82 2713 35

53 5400 14.82 2655 36

54 5500 14.82 2170 37

Optimization terminated: average change in the fitness value less than options.TolFun.

Switching to the hybrid optimization algorithm (FMINSEARCH).

Iteration Func-count min f(x) Procedure

0 1 14.8171

1 5 14.8171 initial simplex

2 7 14.8171 contract inside

3 8 14.8171 reflect

4 10 14.8171 contract outside

5 12 14.8171 contract inside

6 13 14.8171 reflect

7 15 14.8171 contract inside

8 17 14.8171 contract inside

9 19 14.8171 contract inside

10 21 14.8171 contract inside

11 23 14.8171 contract outside

12 25 14.8171 contract inside

13 26 14.8171 reflect

14 28 14.8171 contract inside

15 30 14.8171 contract inside

16 32 14.8171 contract inside

17 34 14.8171 contract inside

18 36 14.8171 contract inside

19 38 14.8171 contract inside

20 40 14.8171 contract inside

21 42 14.8171 contract inside

22 44 14.6551 contract inside

23 46 14.6222 contract outside

24 48 14.492 contract inside

25 50 14.4725 contract inside

26 52 14.3931 contract inside

27 53 14.3931 reflect

28 55 14.3245 contract inside

29 57 14.2382 contract inside

30 58 14.2382 reflect

31 60 14.2382 contract inside

32 62 14.2382 contract inside

33 64 14.2382 contract outside

34 66 14.218 contract inside

35 67 14.218 reflect

36 69 14.2007 contract inside

37 71 14.1933 contract inside

38 73 14.1933 contract inside

39 74 14.1933 reflect

40 76 14.1852 contract inside

41 78 14.1799 contract inside

42 80 14.1792 reflect

43 82 14.179 contract inside

44 84 14.1755 contract inside

45 86 14.174 reflect

46 88 14.1684 contract inside

47 90 14.1667 contract inside

48 91 14.1667 reflect

49 92 14.1667 reflect

50 94 14.1659 reflect

51 96 14.1659 contract inside

52 98 14.165 contract inside

53 100 14.1635 reflect

54 102 14.1635 contract outside

55 104 14.1548 expand

56 105 14.1548 reflect

57 106 14.1548 reflect

58 108 14.151 expand

59 110 14.1501 reflect

60 112 14.1501 contract inside

61 114 14.1436 expand

62 115 14.1436 reflect

63 117 14.1343 expand

64 119 14.1238 expand

65 121 14.1079 expand

66 123 14.0855 expand

67 124 14.0855 reflect

68 126 14.0537 expand

69 127 14.0537 reflect

70 129 14.0342 expand

71 131 14.0122 expand

72 132 14.0122 reflect

73 133 14.0122 reflect

74 135 14.0122 contract inside

75 136 14.0122 reflect

76 138 13.9929 expand

77 139 13.9929 reflect

78 141 13.9665 expand

79 142 13.9665 reflect

80 144 13.9665 contract inside

81 146 13.9482 reflect

82 148 13.9482 contract inside

83 150 13.9183 expand

84 151 13.9183 reflect

85 153 13.8986 expand

86 154 13.8986 reflect

87 156 13.8765 expand

88 158 13.7938 expand

89 159 13.7938 reflect

90 160 13.7938 reflect

91 161 13.7938 reflect

92 162 13.7938 reflect

93 163 13.7938 reflect

94 165 13.7378 reflect

95 166 13.7378 reflect

96 168 13.7171 reflect

97 169 13.7171 reflect

98 171 13.7171 contract inside

99 172 13.7171 reflect

100 173 13.7171 reflect

101 175 13.7119 contract outside

102 177 13.6495 expand

103 178 13.6495 reflect

104 180 13.6495 contract inside

105 181 13.6495 reflect

106 183 13.6495 contract inside

107 184 13.6495 reflect

108 186 13.5842 expand

109 188 13.5842 contract inside

110 189 13.5842 reflect

111 190 13.5842 reflect

112 192 13.5617 reflect

113 194 13.4967 expand

114 196 13.4967 contract inside

115 197 13.4967 reflect

116 198 13.4967 reflect

117 200 13.4611 reflect

118 201 13.4611 reflect

119 203 13.4611 contract inside

120 205 13.4611 contract inside

121 207 13.4611 contract inside

122 209 13.4611 contract inside

123 210 13.4611 reflect

124 212 13.4592 reflect

125 214 13.4592 contract inside

126 215 13.4592 reflect

127 217 13.4592 contract inside

128 219 13.4592 contract inside

129 221 13.44 reflect

130 223 13.44 contract inside

131 225 13.44 contract inside

132 226 13.44 reflect

133 228 13.44 contract inside

134 230 13.44 contract inside

135 231 13.44 reflect

136 232 13.44 reflect

137 234 13.44 contract inside

138 236 13.44 contract inside

139 238 13.44 contract inside

140 240 13.44 contract inside

141 242 13.44 contract inside

142 243 13.44 reflect

143 245 13.44 contract inside

144 246 13.44 reflect

145 247 13.44 reflect

146 249 13.4389 reflect

147 251 13.4389 contract inside

148 252 13.4389 reflect

149 254 13.4389 contract outside

150 256 13.4383 reflect

151 258 13.4383 contract inside

152 259 13.4383 reflect

153 261 13.4383 contract inside

154 263 13.4383 contract inside

155 265 13.4383 contract inside

156 267 13.4383 contract inside

157 269 13.4383 contract inside

158 271 13.4372 expand

159 273 13.4372 contract inside

160 274 13.4372 reflect

161 275 13.4372 reflect

162 277 13.4372 contract inside

163 279 13.4372 contract inside

164 280 13.4372 reflect

165 282 13.4372 contract inside

166 283 13.4372 reflect

167 285 13.437 reflect

168 287 13.437 contract inside

169 289 13.437 contract inside

170 290 13.437 reflect

171 292 13.437 contract inside

172 294 13.437 contract inside

173 296 13.437 contract inside

174 298 13.437 contract inside

175 300 13.437 contract outside

176 302 13.437 contract inside

177 303 13.437 reflect

178 305 13.437 contract inside

179 307 13.437 reflect

180 309 13.437 contract inside

181 311 13.437 contract inside

182 312 13.437 reflect

183 314 13.437 contract inside

184 316 13.437 reflect

185 318 13.437 contract inside

186 320 13.437 contract inside

187 321 13.437 reflect

188 323 13.437 reflect

189 325 13.437 contract inside

190 326 13.437 reflect

191 327 13.437 reflect

192 328 13.437 reflect

193 330 13.437 contract inside

194 332 13.437 contract inside

195 334 13.437 reflect

196 335 13.437 reflect

197 337 13.437 contract inside

198 339 13.437 contract inside

199 341 13.437 reflect

200 343 13.437 contract inside

201 345 13.437 expand

202 347 13.437 contract inside

203 349 13.437 contract inside

204 351 13.437 contract inside

205 352 13.437 reflect

206 353 13.437 reflect

207 355 13.437 contract inside

208 357 13.4369 expand

209 359 13.4369 expand

210 360 13.4369 reflect

211 362 13.4369 expand

212 364 13.4369 expand

213 366 13.4369 expand

214 367 13.4369 reflect

215 369 13.4369 expand

216 370 13.4369 reflect

217 372 13.4368 expand

218 373 13.4368 reflect

219 375 13.4367 expand

220 376 13.4367 reflect

221 378 13.4365 expand

222 379 13.4365 reflect

223 381 13.4363 expand

224 382 13.4363 reflect

225 384 13.4359 expand

226 385 13.4359 reflect

227 387 13.4353 expand

228 388 13.4353 reflect

229 390 13.4345 expand

230 391 13.4345 reflect

231 393 13.4331 expand

232 394 13.4331 reflect

233 396 13.4311 expand

234 397 13.4311 reflect

235 399 13.4281 expand

236 400 13.4281 reflect

237 402 13.4241 expand

238 403 13.4241 reflect

239 405 13.4194 expand

240 406 13.4194 reflect

241 408 13.4155 expand

242 409 13.4155 reflect

243 411 13.4154 reflect

244 412 13.4154 reflect

245 414 13.4154 contract outside

246 416 13.4154 contract inside

247 418 13.4154 contract inside

248 420 13.4154 contract inside

249 422 13.4153 contract inside

250 424 13.4152 reflect

251 426 13.4152 contract inside

252 428 13.4152 contract inside

253 429 13.4152 reflect

254 431 13.4152 contract inside

255 433 13.4152 expand

256 435 13.4152 expand

257 437 13.4152 contract inside

258 439 13.4151 expand

259 441 13.415 expand

260 443 13.4148 expand

261 444 13.4148 reflect

262 446 13.4147 expand

263 447 13.4147 reflect

264 449 13.4144 expand

265 451 13.4139 expand

266 452 13.4139 reflect

267 454 13.4132 expand

268 456 13.4125 expand

269 458 13.4113 expand

270 459 13.4113 reflect

271 461 13.409 expand

272 463 13.4062 expand

273 465 13.4029 expand

274 467 13.4027 reflect

275 469 13.4003 reflect

276 471 13.4003 contract inside

277 473 13.4003 contract inside

278 475 13.4003 contract inside

279 477 13.4003 contract inside

280 479 13.4003 contract inside

281 480 13.4003 reflect

282 482 13.4003 contract inside

283 483 13.4003 reflect

284 485 13.3994 expand

285 487 13.3986 expand

286 489 13.3986 contract inside

287 491 13.398 reflect

288 493 13.398 contract inside

289 495 13.398 contract inside

290 497 13.398 contract inside

291 499 13.398 contract inside

292 501 13.398 contract inside

293 503 13.398 contract inside

294 505 13.398 contract inside

295 507 13.398 contract inside

296 509 13.398 contract inside

297 510 13.398 reflect

298 512 13.398 contract inside

299 514 13.398 contract inside

300 515 13.398 reflect

301 517 13.3979 reflect

302 519 13.3979 contract inside

303 521 13.3979 contract inside

304 522 13.3979 reflect

305 524 13.3978 reflect

306 526 13.3978 contract inside

307 527 13.3978 reflect

308 529 13.3978 contract inside

309 531 13.3978 reflect

310 533 13.3978 contract inside

311 534 13.3978 reflect

312 536 13.3978 expand

313 538 13.3978 contract inside

314 540 13.3978 contract outside

315 541 13.3978 reflect

316 543 13.3978 contract inside

317 544 13.3978 reflect

318 546 13.3977 reflect

319 547 13.3977 reflect

320 549 13.3977 contract inside

321 551 13.3977 contract inside

322 553 13.3977 contract inside

323 555 13.3977 contract inside

324 557 13.3977 contract inside

325 558 13.3977 reflect

326 559 13.3977 reflect

327 560 13.3977 reflect

328 562 13.3977 contract inside

329 564 13.3977 contract inside

330 566 13.3977 contract inside

331 568 13.3977 reflect

332 570 13.3977 contract inside

333 572 13.3977 contract inside

334 574 13.3977 expand

335 576 13.3977 contract inside

336 577 13.3977 reflect

337 579 13.3977 reflect

338 581 13.3977 contract inside

339 582 13.3977 reflect

340 584 13.3977 contract inside

341 586 13.3977 contract inside

342 588 13.3977 contract inside

343 590 13.3977 reflect

344 592 13.3977 contract inside

345 593 13.3977 reflect

346 595 13.3977 reflect

347 597 13.3977 contract inside

348 599 13.3977 contract inside

349 601 13.3977 contract inside

350 603 13.3977 reflect

351 605 13.3977 contract inside

352 607 13.3977 contract inside

353 608 13.3977 reflect

354 610 13.3977 reflect

355 611 13.3977 reflect

356 613 13.3977 contract inside

357 615 13.3977 contract inside

358 616 13.3977 reflect

359 618 13.3977 reflect

360 619 13.3977 reflect

361 621 13.3977 reflect

362 623 13.3977 contract inside

363 625 13.3977 contract inside

364 627 13.3977 contract inside

365 629 13.3977 contract inside

366 631 13.3977 contract inside

367 632 13.3977 reflect

368 633 13.3977 reflect

369 635 13.3977 contract inside

370 637 13.3977 reflect

371 639 13.3977 contract inside

372 640 13.3977 reflect

373 642 13.3977 contract inside

374 644 13.3977 contract inside

375 646 13.3977 contract inside

376 647 13.3977 reflect

377 649 13.3977 contract inside

378 651 13.3977 contract inside

379 653 13.3977 expand

380 655 13.3977 expand

381 657 13.3977 reflect

382 659 13.3977 expand

383 660 13.3977 reflect

384 662 13.3977 contract inside

385 664 13.3977 expand

386 666 13.3977 expand

387 668 13.3977 expand

388 669 13.3977 reflect

389 671 13.3977 expand

390 673 13.3977 expand

391 674 13.3977 reflect

392 676 13.3977 expand

393 678 13.3977 expand

394 679 13.3977 reflect

395 680 13.3977 reflect

396 682 13.3977 expand

397 684 13.3977 expand

398 685 13.3977 reflect

399 687 13.3977 expand

400 688 13.3977 reflect

401 690 13.3977 expand

402 691 13.3977 reflect

403 692 13.3977 reflect

404 694 13.3977 expand

405 695 13.3977 reflect

406 697 13.3977 expand

407 699 13.3977 expand

408 701 13.3977 expand

409 702 13.3977 reflect

410 704 13.3977 expand

411 706 13.3977 expand

412 707 13.3977 reflect

413 709 13.3977 expand

414 711 13.3977 expand

415 713 13.3977 expand

416 714 13.3977 reflect

417 716 13.3977 expand

418 717 13.3977 reflect

419 719 13.3976 expand

420 720 13.3976 reflect

421 722 13.3975 expand

422 723 13.3975 reflect

423 725 13.3974 expand

424 726 13.3974 reflect

425 728 13.3972 expand

426 729 13.3972 reflect

427 731 13.3969 expand

428 732 13.3969 reflect

429 734 13.3964 expand

430 735 13.3964 reflect

431 737 13.3957 expand

432 738 13.3957 reflect

433 740 13.3945 expand

434 741 13.3945 reflect

435 743 13.3927 expand

436 744 13.3927 reflect

437 746 13.3897 expand

438 747 13.3897 reflect

439 749 13.3854 expand

440 750 13.3854 reflect

441 752 13.378 expand

442 753 13.378 reflect

443 755 13.3678 expand

444 756 13.3678 reflect

445 758 13.3614 reflect

446 760 13.3588 reflect

447 762 13.3546 reflect

448 763 13.3546 reflect

449 765 13.3546 contract inside

450 767 13.3546 contract inside

451 769 13.3456 expand

452 770 13.3456 reflect

453 771 13.3456 reflect

454 773 13.3331 expand

455 774 13.3331 reflect

456 776 13.3244 expand

457 778 13.3156 expand

458 779 13.3156 reflect

459 780 13.3156 reflect

460 782 13.3156 contract outside

461 783 13.3156 reflect

462 785 13.3082 expand

463 786 13.3082 reflect

464 788 13.3082 contract inside

465 790 13.2984 expand

466 791 13.2984 reflect

467 793 13.2984 contract outside

468 795 13.2898 expand

469 797 13.2875 reflect

470 799 13.2875 contract inside

471 800 13.2875 reflect

472 802 13.286 reflect

473 804 13.2765 expand

474 805 13.2765 reflect

475 807 13.2683 expand

476 808 13.2683 reflect

477 809 13.2683 reflect

478 810 13.2683 reflect

479 812 13.2627 expand

480 814 13.2491 expand

481 816 13.2491 contract inside

482 817 13.2491 reflect

483 819 13.2366 expand

484 821 13.2366 contract inside

485 822 13.2366 reflect

486 824 13.2366 contract inside

487 826 13.2298 expand

488 828 13.225 expand

489 830 13.225 contract inside

490 832 13.2161 reflect

491 833 13.2161 reflect

492 835 13.2161 contract inside

493 837 13.2104 reflect

494 839 13.2104 contract inside

495 840 13.2104 reflect

496 842 13.2072 reflect

497 844 13.2072 contract inside

498 845 13.2072 reflect

499 847 13.2043 expand

500 848 13.2043 reflect

501 850 13.2043 contract inside

502 852 13.204 reflect

503 854 13.2028 contract inside

504 856 13.2016 reflect

505 857 13.2016 reflect

506 859 13.1969 expand

507 861 13.1969 contract inside

508 863 13.1969 contract inside

509 864 13.1969 reflect

510 866 13.1952 reflect

511 867 13.1952 reflect

512 869 13.1918 expand

513 871 13.1918 contract inside

514 873 13.1918 contract outside

515 875 13.1918 contract inside

516 876 13.1918 reflect

517 877 13.1918 reflect

518 879 13.1918 contract inside

519 880 13.1918 reflect

520 882 13.1897 reflect

521 883 13.1897 reflect

522 885 13.1886 expand

523 887 13.1882 reflect

524 889 13.187 expand

525 891 13.187 contract inside

526 892 13.187 reflect

527 894 13.1852 expand

528 896 13.1852 contract inside

529 897 13.1852 reflect

530 899 13.1852 contract inside

531 901 13.184 reflect

532 903 13.1834 reflect

533 904 13.1834 reflect

534 906 13.1824 reflect

535 907 13.1824 reflect

536 909 13.1824 contract inside

537 911 13.1808 expand

538 912 13.1808 reflect

539 914 13.1808 contract outside

540 915 13.1808 reflect

541 917 13.1808 reflect

542 919 13.1808 contract outside

543 921 13.1806 reflect

544 923 13.1797 expand

545 924 13.1797 reflect

546 926 13.1797 reflect

547 928 13.1797 contract inside

548 930 13.1796 reflect

549 932 13.1789 reflect

550 933 13.1789 reflect

551 935 13.1789 contract inside

552 937 13.1784 expand

553 938 13.1784 reflect

554 940 13.1784 contract inside

555 942 13.1777 expand

556 943 13.1777 reflect

557 945 13.1775 expand

558 946 13.1775 reflect

559 948 13.1772 reflect

560 950 13.1772 reflect

561 952 13.1772 contract inside

562 954 13.177 reflect

563 955 13.177 reflect

564 956 13.177 reflect

565 958 13.1767 contract inside

566 960 13.1766 reflect

567 962 13.1764 contract inside

568 964 13.1764 contract inside

569 966 13.1764 contract inside

570 967 13.1764 reflect

571 969 13.1764 contract inside

572 971 13.1761 expand

573 972 13.1761 reflect

574 973 13.1761 reflect

575 975 13.1759 expand

576 977 13.1758 reflect

577 978 13.1758 reflect

578 980 13.1751 expand

579 981 13.1751 reflect

580 982 13.1751 reflect

581 984 13.1751 contract inside

582 986 13.1751 reflect

583 988 13.1751 contract inside

584 990 13.1751 contract inside

585 991 13.1751 reflect

586 993 13.1751 contract inside

587 995 13.175 reflect

588 997 13.175 contract inside

589 999 13.1748 expand

590 1000 13.1748 reflect

Exiting: Maximum number of function evaluations has been exceeded

- increase MaxFunEvals option.

Current function value: 13.174750

FMINSEARCH terminated.

**x =[2.1845,0.9615,0.6110,0.2024]; fval =13.1748;**

exitflag =1;

output =

problemtype: 'unconstrained'

rngstate: [1x1 struct]

generations: 54

funccount: 6500

message: [1x250 char]

population,scores;

Sending a stop signal to all the labs ... stopped.

**Caculation finished and the elapsedTime= 28.0171hours**

**x =[2.1845,0.9615,0.6110,0.2024]; fval =13.1748;**

**P\_asterisk =13.1742; L =1.0000; delta =-2.3626e-005; AR =2.9074; Re =157.4793(123.0597);**

**penaltyfun1 =0.0473; penaltyfun2 =0; penaltyfun5 =0; obj\_function =13.2215;**

Elapsed time is 48.544682 seconds.