20150419-aerodynamic\_moment\_model2\_2\_optimal-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 99.28 1279 0

2 300 98.59 1191 0

3 400 43.5 1061 0

4 500 43.3 946.3 0

5 600 42.46 872.7 0

6 700 42.16 889 0

7 800 42.16 889 1

8 900 42.16 851 2

9 1000 42.16 746.3 3

10 1100 42.07 747.7 0

11 1200 42.07 723 1

12 1300 41.26 686.6 0

13 1400 41.16 709.3 0

14 1500 41.16 765.7 1

15 1600 41.16 670.2 2

16 1700 41.16 655.6 3

17 1800 41.16 732.8 4

18 1900 41.16 702.6 0

19 2000 41.16 682.1 1

20 2100 41.16 622 2

21 2200 40.31 615.5 0

22 2300 40.31 634.2 1

23 2400 40.31 591.7 2

24 2500 40.31 605 3

25 2600 40.31 497.6 4

26 2700 40.31 550.5 5

27 2800 40.31 546 6

28 2900 40.31 446.5 7

29 3000 40.3 602.1 0

30 3100 39.89 755.2 0

31 3200 39.85 657.5 0

32 3300 39.81 627.8 0

33 3400 39.81 523.8 1

34 3500 39.81 582.9 2

35 3600 39.81 507.3 0

36 3700 39.81 521.7 0

37 3800 39.81 465.9 1

38 3900 39.81 441.9 2

39 4000 39.81 460.5 0

40 4100 39.81 553 1

41 4200 39.81 586.3 2

42 4300 39.81 532.5 0

43 4400 39.81 498.9 1

44 4500 39.81 565.1 2

45 4600 39.81 540 3

46 4700 39.81 505.8 4

47 4800 39.81 484.8 5

48 4900 39.81 499.3 6

49 5000 39.81 453.3 7

50 5100 39.81 455.6 8

51 5200 39.81 367 9

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 39.8055

1 5 39.8055 initial simplex

2 7 39.8055 contract inside

3 9 39.8055 contract inside

4 11 39.8055 contract inside

5 13 39.8055 contract inside

6 15 39.7036 reflect

7 17 39.6687 reflect

8 18 39.6687 reflect

9 20 39.6239 reflect

10 22 39.6239 contract inside

11 24 39.6017 reflect

12 26 39.6017 contract inside

13 27 39.6017 reflect

14 29 39.6017 contract inside

15 31 39.6017 contract inside

16 33 39.5569 expand

17 35 39.5569 contract inside

18 36 39.5569 reflect

19 38 39.5448 reflect

20 40 39.5317 reflect

21 42 39.5317 contract inside

22 44 39.5317 contract inside

23 46 39.5317 contract inside

24 47 39.5317 reflect

25 49 39.5317 contract inside

26 51 39.5317 contract inside

27 53 39.5317 contract inside

28 55 39.5317 contract inside

29 57 39.5317 contract inside

30 59 39.5299 reflect

31 61 39.5299 contract inside

32 63 39.5253 reflect

33 65 39.5253 contract inside

34 66 39.5253 reflect

35 68 39.5253 contract inside

36 70 39.5253 contract inside

37 72 39.5253 contract inside

38 74 39.5249 reflect

39 76 39.5249 contract inside

40 78 39.5229 reflect

41 80 39.5229 contract inside

42 82 39.5229 contract inside

43 84 39.5229 contract inside

44 86 39.5229 contract inside

45 87 39.5229 reflect

46 89 39.5229 contract inside

47 91 39.5229 contract inside

48 92 39.5229 reflect

49 94 39.5224 reflect

50 96 39.5214 reflect

51 98 39.5214 contract outside

52 100 39.5214 contract inside

53 102 39.5214 contract inside

54 104 39.5214 contract inside

55 106 39.5214 contract inside

56 108 39.5214 contract inside

57 109 39.5214 reflect

58 111 39.5212 reflect

59 113 39.5212 contract inside

60 115 39.5211 reflect

61 117 39.5211 contract inside

62 119 39.5211 reflect

63 121 39.5211 contract inside

64 123 39.521 reflect

65 125 39.521 contract inside

66 127 39.521 contract inside

67 129 39.521 contract inside

68 131 39.521 contract inside

69 132 39.521 reflect

70 134 39.521 contract inside

71 136 39.521 reflect

72 138 39.521 contract inside

73 140 39.521 contract inside

74 141 39.521 reflect

75 143 39.521 contract inside

76 145 39.521 reflect

77 147 39.521 contract inside

78 149 39.521 contract inside

79 151 39.521 reflect

80 152 39.521 reflect

81 154 39.5209 reflect

82 156 39.5209 contract inside

83 157 39.5209 reflect

84 159 39.5209 reflect

85 161 39.5209 reflect

86 163 39.5209 contract inside

87 165 39.5209 contract inside

88 167 39.5209 contract inside

89 168 39.5209 reflect

90 170 39.5209 contract inside

91 172 39.5209 reflect

92 174 39.5209 reflect

93 176 39.5209 contract inside

94 178 39.5209 reflect

95 180 39.5209 contract inside

96 181 39.5209 reflect

97 183 39.5209 expand

98 185 39.5209 contract inside

99 187 39.5209 contract inside

100 189 39.5209 contract inside

101 190 39.5209 reflect

102 191 39.5209 reflect

103 193 39.5209 contract inside

104 195 39.5209 contract inside

105 197 39.5209 contract inside

106 199 39.5209 reflect

107 201 39.5209 reflect

108 203 39.5209 contract inside

109 205 39.5209 contract inside

110 207 39.5209 contract inside

111 208 39.5209 reflect

112 210 39.5209 reflect

113 212 39.5209 contract inside

114 214 39.5209 contract inside

115 216 39.5209 contract inside

116 218 39.5209 reflect

117 220 39.5209 reflect

118 222 39.5209 contract inside

119 224 39.5209 expand

120 226 39.5209 contract inside

121 228 39.5209 contract inside

122 229 39.5209 reflect

123 231 39.5209 contract inside

124 233 39.5209 contract outside

125 234 39.5209 reflect

126 235 39.5209 reflect

127 237 39.5209 expand

128 239 39.5209 expand

129 240 39.5209 reflect

130 242 39.5209 expand

131 244 39.5209 expand

132 245 39.5209 reflect

133 247 39.5209 contract inside

134 249 39.5209 reflect

135 251 39.5209 contract inside

136 252 39.5209 reflect

137 254 39.5209 contract inside

138 256 39.5209 expand

139 258 39.5209 reflect

140 260 39.5209 contract inside

141 262 39.5209 expand

142 264 39.5209 expand

143 265 39.5209 reflect

144 267 39.5209 expand

145 269 39.5209 expand

146 271 39.5209 expand

147 273 39.5208 expand

148 274 39.5208 reflect

149 276 39.5208 expand

150 277 39.5208 reflect

151 279 39.5208 expand

152 280 39.5208 reflect

153 282 39.5207 expand

154 283 39.5207 reflect

155 285 39.5206 expand

156 286 39.5206 reflect

157 288 39.5204 expand

158 289 39.5204 reflect

159 291 39.5203 expand

160 293 39.5202 expand

161 295 39.5202 reflect

162 297 39.5202 reflect

163 298 39.5202 reflect

164 299 39.5202 reflect

165 300 39.5202 reflect

166 302 39.5202 contract inside

167 304 39.5202 contract inside

168 305 39.5202 reflect

169 307 39.5202 reflect

170 309 39.5202 reflect

171 311 39.5202 contract inside

172 313 39.5202 reflect

173 314 39.5202 reflect

174 315 39.5202 reflect

175 317 39.5202 contract inside

176 318 39.5202 reflect

177 320 39.5202 contract inside

178 322 39.5202 contract inside

179 323 39.5202 reflect

180 324 39.5202 reflect

181 326 39.5202 contract inside

182 328 39.5202 contract inside

183 330 39.5202 contract inside

184 332 39.5202 contract inside

185 334 39.5202 contract inside

186 336 39.5202 contract inside

187 338 39.5202 reflect

188 340 39.5202 contract inside

189 342 39.5202 contract outside

190 343 39.5202 reflect

191 345 39.5202 contract inside

192 347 39.5202 contract inside

193 349 39.5202 expand

194 351 39.5202 reflect

195 353 39.5202 contract inside

196 355 39.5202 contract inside

197 357 39.5202 contract inside

198 359 39.5202 contract inside

199 361 39.5202 reflect

200 363 39.5202 contract inside

201 365 39.5202 contract inside

202 367 39.5202 reflect

203 369 39.5202 contract inside

204 371 39.5202 contract inside

205 373 39.5202 contract inside

206 374 39.5202 reflect

207 375 39.5202 reflect

208 377 39.5202 expand

209 379 39.5202 expand

210 381 39.5202 contract inside

211 383 39.5202 contract inside

212 384 39.5202 reflect

213 386 39.5202 expand

214 387 39.5202 reflect

215 389 39.5202 expand

216 391 39.5202 contract inside

217 393 39.5202 expand

218 395 39.5202 expand

219 397 39.5202 expand

220 398 39.5202 reflect

221 400 39.5202 expand

222 401 39.5202 reflect

223 403 39.5202 expand

224 405 39.5202 expand

225 406 39.5202 reflect

226 408 39.5202 expand

227 409 39.5202 reflect

228 411 39.5202 reflect

229 413 39.5202 expand

230 415 39.5202 contract outside

231 416 39.5202 reflect

232 418 39.5202 expand

233 420 39.5202 reflect

234 422 39.5202 expand

235 423 39.5202 reflect

236 425 39.5202 expand

237 427 39.5202 expand

238 428 39.5202 reflect

239 429 39.5202 reflect

240 430 39.5202 reflect

241 432 39.5202 expand

242 434 39.5202 expand

243 435 39.5202 reflect

244 437 39.5202 expand

245 438 39.5202 reflect

246 440 39.5202 expand

247 442 39.5202 expand

248 444 39.5202 expand

249 445 39.5202 reflect

250 447 39.5202 expand

251 449 39.5202 expand

252 450 39.5202 reflect

253 452 39.5202 expand

254 454 39.5202 contract inside

255 455 39.5202 reflect

256 457 39.5202 contract inside

257 459 39.5202 reflect

258 461 39.5202 contract inside

259 463 39.5202 contract inside

260 465 39.5202 contract inside

261 467 39.5202 contract inside

262 469 39.5202 contract inside

263 471 39.5202 contract inside

264 473 39.5202 reflect

265 475 39.5202 contract inside

266 477 39.5202 contract inside

267 479 39.5202 contract inside

268 481 39.5202 contract inside

269 483 39.5202 contract inside

270 485 39.5202 contract inside

271 487 39.5202 reflect

272 489 39.5202 contract inside

273 491 39.5202 contract inside

274 493 39.5202 reflect

275 494 39.5202 reflect

276 496 39.5202 reflect

277 498 39.5202 contract inside

278 499 39.5202 reflect

279 501 39.5202 contract inside

280 503 39.5202 contract inside

281 505 39.5202 reflect

282 507 39.5202 contract inside

283 509 39.5202 reflect

284 511 39.5202 expand

285 513 39.5202 contract inside

286 515 39.5202 reflect

287 517 39.5202 contract inside

288 519 39.5202 expand

289 520 39.5202 reflect

290 522 39.5202 reflect

291 524 39.5202 reflect

292 526 39.5202 contract inside

293 527 39.5202 reflect

294 529 39.5202 contract inside

295 531 39.5202 contract inside

296 533 39.5202 contract inside

297 535 39.5202 contract inside

298 537 39.5202 reflect

299 539 39.5202 contract inside

300 541 39.5202 reflect

301 542 39.5202 reflect

302 544 39.5202 contract inside

303 546 39.5202 contract outside

304 548 39.5202 contract inside

305 549 39.5202 reflect

306 551 39.5202 contract inside

307 552 39.5202 reflect

308 553 39.5202 reflect

309 555 39.5202 reflect

310 557 39.5202 contract inside

311 559 39.5202 contract inside

312 561 39.5202 reflect

313 562 39.5202 reflect

314 563 39.5202 reflect

315 565 39.5202 contract inside

316 566 39.5202 reflect

317 568 39.5202 contract inside

318 570 39.5202 reflect

319 572 39.5202 contract inside

320 573 39.5202 reflect

321 575 39.5202 contract inside

322 577 39.5202 reflect

323 579 39.5202 reflect

324 581 39.5202 reflect

325 582 39.5202 reflect

326 584 39.5202 contract inside

327 586 39.5202 contract inside

328 588 39.5202 expand

329 590 39.5202 contract inside

330 592 39.5202 reflect

331 594 39.5202 contract inside

332 596 39.5202 contract inside

333 598 39.5202 contract outside

334 600 39.5202 reflect

335 602 39.5202 reflect

336 604 39.5202 contract inside

337 606 39.5202 reflect

338 608 39.5202 contract inside

339 610 39.5202 reflect

340 612 39.5202 contract inside

341 614 39.5202 contract inside

342 616 39.5202 contract inside

343 618 39.5202 contract inside

344 619 39.5202 reflect

345 621 39.5202 contract inside

346 623 39.5202 reflect

347 625 39.5202 contract inside

348 627 39.5202 reflect

349 629 39.5202 contract inside

350 630 39.5202 reflect

351 632 39.5202 reflect

352 634 39.5202 contract inside

353 636 39.5202 contract inside

354 637 39.5202 reflect

355 638 39.5202 reflect

356 640 39.5202 contract inside

357 642 39.5202 reflect

358 644 39.5202 contract inside

359 646 39.5202 reflect

360 648 39.5202 contract inside

361 650 39.5202 reflect

362 651 39.5202 reflect

363 653 39.5202 contract inside

364 655 39.5202 reflect

365 657 39.5202 reflect

366 658 39.5202 reflect

367 660 39.5202 contract inside

368 661 39.5202 reflect

369 663 39.5202 expand

370 665 39.5202 contract inside

371 666 39.5202 reflect

372 667 39.5202 reflect

373 669 39.5202 contract inside

374 671 39.5202 contract inside

375 673 39.5202 reflect

376 675 39.5202 contract inside

377 677 39.5202 contract inside

378 679 39.5202 reflect

379 680 39.5202 reflect

380 682 39.5202 contract outside

381 684 39.5202 contract inside

382 685 39.5202 reflect

383 687 39.5202 expand

384 689 39.5202 contract inside

385 690 39.5202 reflect

386 691 39.5202 reflect

387 693 39.5202 contract inside

388 695 39.5202 reflect

389 696 39.5202 reflect

390 698 39.5202 reflect

391 700 39.5202 contract inside

392 701 39.5202 reflect

393 702 39.5202 reflect

394 704 39.5202 contract inside

395 706 39.5202 reflect

396 708 39.5202 reflect

397 710 39.5202 contract inside

398 712 39.5202 contract inside

399 713 39.5202 reflect

400 714 39.5202 reflect

401 716 39.5202 expand

402 718 39.5202 reflect

403 720 39.5202 reflect

404 722 39.5202 contract inside

405 724 39.5202 contract inside

406 726 39.5202 contract inside

407 728 39.5202 reflect

408 730 39.5202 contract inside

409 732 39.5202 contract inside

410 734 39.5202 reflect

411 736 39.5202 contract inside

412 738 39.5202 contract inside

413 740 39.5202 contract inside

414 742 39.5202 contract outside

415 744 39.5202 reflect

416 746 39.5202 reflect

417 748 39.5202 contract inside

418 750 39.5202 reflect

419 752 39.5202 reflect

420 754 39.5202 contract inside

421 756 39.5202 contract inside

422 757 39.5202 reflect

423 759 39.5202 contract inside

424 761 39.5202 reflect

425 763 39.5202 contract inside

426 765 39.5202 contract inside

427 767 39.5202 reflect

428 769 39.5202 reflect

429 771 39.5202 contract inside

430 773 39.5202 contract inside

431 775 39.5202 contract inside

432 776 39.5202 reflect

433 778 39.5202 contract inside

434 780 39.5202 contract inside

435 781 39.5202 reflect

436 783 39.5202 reflect

437 784 39.5202 reflect

Optimization terminated:

the current x satisfies the termination criteria using OPTIONS.TolX of 1.000000e-004

and F(X) satisfies the convergence criteria using OPTIONS.TolFun of 1.000000e-015

FMINSEARCH terminated.

x =[1.0000,0.5000,0.5716,0.0241]; fval =39.5202;

exitflag =1;

output = problemtype: 'unconstrained'

rngstate: [1x1 struct]

generations: 51

funccount: 5984

message: [1x296 char]

population… scores…

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

Elapsed time is 6045.929877 seconds.=1.6794h

penaltyfun =0; stdev\_v =15.8410; stdev\_h =23.6791; obj\_function =39.5201;

Elapsed time is 1.335896 seconds.

x =[1,1,1,1];

penaltyfun =0; stdev\_v =19.0822; stdev\_h =25.9035; obj\_function =44.9857;

Elapsed time is 0.575007 seconds.

**下面采用模式搜索获得优化结果**

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

Iter f-count f(x) MeshSize Method

0 1 44.9857 1

1 9 44.9857 0.5 Refine Mesh

2 17 42.771 1 Successful Poll

3 25 42.771 0.5 Refine Mesh

4 33 41.6476 1 Successful Poll

5 41 41.6476 0.5 Refine Mesh

6 49 40.0929 1 Successful Poll

7 57 40.0929 0.5 Refine Mesh

8 65 40.0929 0.25 Refine Mesh

9 73 39.6823 0.5 Successful Poll

10 81 39.6823 0.25 Refine Mesh

11 89 39.6823 0.125 Refine Mesh

12 97 39.5729 0.25 Successful Poll

13 105 39.5729 0.125 Refine Mesh

14 113 39.5729 0.0625 Refine Mesh

15 121 39.5424 0.125 Successful Poll

16 129 39.5424 0.0625 Refine Mesh

17 137 39.5424 0.03125 Refine Mesh

18 145 39.5333 0.0625 Successful Poll

19 153 39.5235 0.125 Successful Poll

20 161 39.5235 0.0625 Refine Mesh

21 169 39.5235 0.03125 Refine Mesh

22 177 39.5235 0.01563 Refine Mesh

23 185 39.5155 0.03125 Successful Poll

24 193 39.5155 0.01563 Refine Mesh

25 201 39.5155 0.007813 Refine Mesh

26 209 39.5155 0.01563 Successful Poll

27 217 39.5155 0.007813 Refine Mesh

28 225 39.5155 0.003906 Refine Mesh

29 233 39.5135 0.007813 Successful Poll

30 241 39.5135 0.003906 Refine Mesh

31 249 39.5135 0.001953 Refine Mesh

32 257 39.5135 0.0009766 Refine Mesh

33 265 39.513 0.001953 Successful Poll

34 273 39.513 0.0009766 Refine Mesh

35 281 39.513 0.0004883 Refine Mesh

36 289 39.5128 0.0009766 Successful Poll

37 297 39.5128 0.0004883 Refine Mesh

38 305 39.5128 0.0009766 Successful Poll

39 313 39.5128 0.0004883 Refine Mesh

40 321 39.5128 0.0002441 Refine Mesh

41 329 39.5127 0.0004883 Successful Poll

42 337 39.5127 0.0002441 Refine Mesh

43 345 39.5127 0.0004883 Successful Poll

44 353 39.5127 0.0002441 Refine Mesh

45 361 39.5127 0.0001221 Refine Mesh

46 369 39.5127 0.0002441 Successful Poll

47 377 39.5127 0.0001221 Refine Mesh

48 385 39.5127 6.104e-005 Refine Mesh

49 393 39.5127 0.0001221 Successful Poll

50 401 39.5127 6.104e-005 Refine Mesh

51 409 39.5127 3.052e-005 Refine Mesh

52 417 39.5127 1.526e-005 Refine Mesh

53 425 39.5127 7.629e-006 Refine Mesh

54 433 39.5127 1.526e-005 Successful Poll

55 441 39.5127 7.629e-006 Refine Mesh

56 449 39.5127 3.815e-006 Refine Mesh

57 457 39.5127 7.629e-006 Successful Poll

58 465 39.5127 3.815e-006 Refine Mesh

59 473 39.5127 1.907e-006 Refine Mesh

60 481 39.5127 3.815e-006 Successful Poll

61 489 39.5127 1.907e-006 Refine Mesh

62 497 39.5127 9.537e-007 Refine Mesh

Optimization terminated: mesh size less than options.TolMesh.

x =[1,0.5,0.571,0.01]; % fval =39.5127;

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

Elapsed time is 127.125440 seconds.