```
% make_n5_mECs.m
%
% This script makes a cell array mEC of the motif equivalence classes (mECs)
% where mEC{k} gives the graph numbers (for n5_digraphs.mat) of the graphs
% in that mEC. It also creates mEC_label that describes the class, mEC_notes with
% special information about the classes, mEC_start which lists the first graph in
% mEC and mEC_end which lists the last graph of the mEC.

% Data saved as: save('n5_mECs.mat', 'mEC', 'mEC_label','mEC_notes', 'mEC_core_motifs', 'mEC_start', 'mEC_end',
% 'mECs_missing_att', 'graphs_missing_att', 'mECs_param_dep', 'graphs_param_dep')

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Initialize cell arrays that may end up with some entries empty:
mEC_notes = cell(155,1);   % this will store any special notes about certain mECs

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
mEC{1} = [ 1 ];
mEC_label{1} = 'mEC 1: 5-cycle (core motif), Group I-A (graph 1)';
mEC_core_motifs{1} = '{ [1  2  3  4  5] }';

mEC{2} = [ 2 ];
mEC_label{2} = 'mEC 2: 5-star (core motif), Group I-A (graph 2)';
mEC_core_motifs{2} = '{ [1  2  3  4  5] }';
mEC_notes{2} = 'The Gaudi attractor appears as a 2nd attractor for eps = 0.095, delta = 0.11 and for eps = 0.1, delta = 0.12.';

mEC{3} = [ 3 ];
mEC_label{3} = 'mEC 3: 5-star with 2-cliques (core motif), Group I-A (graph 3)';
mEC_core_motifs{3} = '{ [1  2  3  4  5] }';

mEC{4} = [ 4 ];
mEC_label{4} = 'mEC 4: 4-cycle[1,3][2,4] (core motif), Group I-B (graph 4)';
mEC_core_motifs{4} = '{ [1  2  3  4  5] }';

mEC{5} = [ 5 ];
mEC_label{5} = 'mEC 5: 4-cycle[1,3][2,4] plus edge out (core motif), Group I-B (graph 5)';
mEC_core_motifs{5} = '{ [1  2  3  4  5] }';

mEC{6} = [ 6 ];
mEC_label{6} = 'mEC 6: 4-cycle[1,3][2,4] plus 2 edges out (core motif), Group I-B (graph 6)';
mEC_core_motifs{6} = '{ [1  2  3  4  5] }';

mEC{7} = [ 7 ];
mEC_label{7} = 'mEC 7: clique union 4-cycle + pt (core motif), Group I-C (graph 7)';
mEC_core_motifs{7} = '{ [1  2  3  4  5] }';

mEC{8} = [ 8 ];
mEC_label{8} = 'mEC 8: clique union 4-cycu + pt (core motif), Group I-C (graph 8)';
mEC_core_motifs{8} = '{ [1  2  3  4  5] }';

mEC{9} = [ 9 ];
mEC_label{9} = 'mEC 9: clique union 4-ufd + pt (core motif), Group I-C (graph 9)';
mEC_core_motifs{9} = '{ [1  2  3  4  5] }';
mEC_notes{9} = 'The attractor for this core motif has surprise symmetry.';
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mEC{10} = [10];
mEC_label{10} = 'mEC 10: clique union 3-cycle + 2-clique (or fusion 3-cycle + pt) (core motif), Group I-C (graph 10)';
mEC_core_motifs{10} = '{ [1 2 3 4 5] }';

mEC{11} = [11];
mEC_label{11} = 'mEC 11: pure cyclic union on pt, 2-clique, pt, pt (or extended 4-cycu) (core motif), Group I-D (graph 11)';
mEC_core_motifs{11} = '{ [1 2 3 4 5] }';

mEC{12} = [12];
mEC_label{12} = 'mEC 12: extended 4-cycu down-skip edge node 2 (** no core motifs for eps = 0.51, delta = 1.76 **), Group I-D (graph 12)';
mEC_core_motifs{12} = '{ [] }';
mEC_notes{12} = 'The attractor for this graph (which has *no* core motifs) has surprise symmetry. This class contains 1 graph that has parameter dependent core motifs (# 12).';

mEC{13} = [13];
mEC_label{13} = 'mEC 13: extended 4-ufd (core motif), Group I-D (graph 13)';
mEC_core_motifs{13} = '{ [1 2 3 4 5] }';
mEC_notes{13} = 'The attractor for this core motif has surprise symmetry.';

mEC{14} = [14];
mEC_label{14} = 'mEC 14: extended 4-ufd down-skip edge node 2 (core motif), Group I-D (graph 14)';
mEC_core_motifs{14} = '{ [1 2 3 4 5] }';
mEC_notes{14} = 'The attractor for this core motif has surprise symmetry.';

mEC{15} = [15];
mEC_label{15} = 'mEC 15: extended 4-ufd + down-skip edge node 3 (core motif), Group I-D (graph 15)';
mEC_core_motifs{15} = '{ [1 2 3 4 5] }';
mEC_notes{15} = 'The attractor for this core motif has surprise symmetry.';

mEC{16} = [16];
mEC_label{16} = 'mEC 16: pure cyclic union pt, 3-clique, pt (core motif), Group I-E (graph 16)';
mEC_core_motifs{16} = '{ [1 2 3 4 5] }';

mEC{17} = [17];
mEC_label{17} = 'mEC 17: cyclic union pt, 3-clique, pt w/ added back edge (core motif), Group I-E (graph 17)';
mEC_core_motifs{17} = '{ [1 2 3 4 5] }';
mEC_notes{17} = 'The attractor for this core motif has surprise symmetry.';

mEC{18} = [18];
mEC_label{18} = 'mEC 18: cyclic union pt, 3-clique, pt w/ two added back edges (core motif), Group I-E (graph 18)';
mEC_core_motifs{18} = '{ [1 2 3 4 5] }';
mEC_notes{18} = 'The attractor for this core motif has surprise symmetry.';

mEC{19} = [19];
mEC_label{19} = 'mEC 19: pure cyclic union pt, 3-cycle, pt (core motif), Group I-F (graph 19)';
mEC_core_motifs{19} = '{ [1 2 3 4 5] }';
mEC_notes{19} = 'The attractor for this core motif has surprise symmetry.';

mEC{20} = [20];
mEC_label{20} = 'mEC 20: cyclic union pt, 3-cycle, pt w/ added back edge (core motif), Group I-F (graph 20)';
mEC_core_motifs{20} = '{ [1 2 3 4 5] }';

mEC{21} = [21];
mEC_label{21} = 'mEC 21: cyclic union pt, 3-cycle, pt w/ dropped down edge (core motif), Group I-F (graph 21)';
mEC_core_motifs{21} = '{ [1 2 3 4 5] }';

mEC{22} = [22];
mEC_label{22} = 'mEC 22: cyclic union pt, 3-cycle, pt w/ added back edge and dropped down edge (v1) (core motif), Group I-F (graph 22)';
mEC_core_motifs{22} = '{ [1 2 3 4 5] }';

mEC{23} = [23];
mEC_label{23} = 'mEC 23: cyclic union pt, 3-cycle, pt w/ added back edge and dropped down edge (v2) (core motif), Group I-F (graph 23)';
mEC_core_motifs{23} = '{ [1 2 3 4 5] }';

mEC{24} = [24];
mEC_label{24} = 'mEC 24: cyclic union pt, 3-cycle, pt w/ added back edge and dropped down edge (v3) ** 2 attractors ** (core motif), Group I-F (graph 24)';
mEC_core_motifs{24} = '{ [1 2 3 4 5] }';

mEC{25} = [25];
mEC_label{25} = 'mEC 25: pure cyclic union pt, 2-clique, 2-clique (core motif), Group I-G (graph 25)';
mEC_core_motifs{25} = '{ [1 2 3 4 5] }';

mEC{26} = [26];
mEC_label{26} = 'mEC 26: cyclic union pt, 2-clique, 2-clique w/ added back edge (core motif), Group I-G (graph 26)';
mEC_core_motifs{26} = '{ [1 2 3 4 5] }';
mEC_notes{26} = 'The attractor for this core motif has surprise symmetry.';

mEC{27} = [27];
mEC_label{27} = 'mEC 27: cyclic union pt, 2-clique, 2-clique w/ two added back edges (v1) (core motif), Group I-G (graph 27)';
mEC_core_motifs{27} = '{ [1 2 3 4 5] }';
mEC_notes{27} = 'The attractor for this core motif has surprise symmetry.';

mEC{28} = [28];
mEC_label{28} = 'mEC 28: cyclic union pt, 2-clique, 2-clique w/ two added back edges (v2) (core motif), Group I-G (graph 28)';
mEC_core_motifs{28} = '{ [1 2 3 4 5] }';
mEC_notes{28} = 'The attractor for this core motif has surprise symmetry. This graph is s_i-equivalent to graph 27.';

mEC{29} = [29];
mEC_label{29} = 'mEC 29: cyclic union pt, 2-clique, 2-clique w/ three added back edges (v1) (core motif), Group I-G (graph 29)';
mEC_core_motifs{29} = '{ [1 2 3 4 5] }';
mEC_notes{29} = 'The attractor for this core motif has surprise symmetry.';

mEC{30} = [30];
mEC_label{30} = 'mEC 30: cyclic union pt, 2-clique, 2-clique w/ three added back edges (v2) (core motif), Group I-G (graph 30)';
mEC_core_motifs{30} = '{ [1 2 3 4 5] }';
mEC_notes{30} = 'The attractor for this core motif has surprise symmetry. This graph is s_i-equivalent to graph 29.';

mEC{31} = [31];
mEC_label{31} = 'mEC 31: cyclic union pt, 2-clique, 2-clique w/ two added back edges (v3) (core motif), Group I-G (graph 31)';
mEC_core_motifs{31} = '{ [1 2 3 4 5] }';
mEC_notes{31} = 'The attractor for this core motif has surprise symmetry.';

mEC{32} = [32];
mEC_label{32} = 'mEC 32: envelope attractor (v1) (** no core motifs for eps = 0.51, delta = 1.76 **), Group I-H (graph 32)';
mEC_core_motifs{32} = '{ [] }';
mEC_notes{32} = 'This class contains 1 graph that has parameter dependent core motifs (# 32).';

mEC{33} = [33];
mEC_label{33} = 'mEC 33: envelope attractor (v2) (** no core motifs for eps = 0.51, delta = 1.76 **), Group I-H (graph 33)';
mEC_core_motifs{33} = '{ [] }';
mEC_notes{33} = 'This class contains 1 graph that has parameter dependent core motifs (# 33).';

mEC{34} = [34];
mEC_label{34} = 'mEC 34: envelope attractor (v3) (core motif), Group I-H (graph 34)';
mEC_core_motifs{34} = '{ [1 2 3 4 5] }';

mEC{35} = [35];
mEC_label{35} = 'mEC 35: envelope attractor (v4) (core motif), Group I-H (graph 35)';
mEC_core_motifs{35} = '{ [1 2 3 4 5] }';

mEC{36} = [36];
mEC_label{36} = 'mEC 36: envelope attractor (v5) (core motif), Group I-H (graph 36)';
mEC_core_motifs{36} = '{ [1 2 3 4 5] }';

mEC{37} = [37];
mEC_label{37} = 'mEC 37: double envelope attractor (v1) (core motif), Group I-I (graph 37)';
mEC_core_motifs{37} = '{ [1 2 3 4 5] }';

mEC{38} = [38];
mEC_label{38} = 'mEC 38: double envelope attractor (v2) (core motif), Group I-I (graph 38)';
mEC_core_motifs{38} = '{ [1 2 3 4 5] }';

mEC{39} = [39];
mEC_label{39} = 'mEC 39: weird attractor (core motif), Group I-J (graph 39)';
mEC_core_motifs{39} = '{ [1 2 3 4 5] }';

mEC{40} = [40:52];
mEC_label{40} = 'mEC 40: 4-cycle [13 graphs] Group II (graphs [40:52])';
mEC_core_motifs{40} = '{ [1 2 3 4] }';

mEC{41} = [53:54];
mEC_label{41} = 'mEC 41: 4-cycle + sink [2 graphs] Group II (graphs [53:54])';
mEC_core_motifs{41} = '{ [1 2 3 4], [5] }';

mEC{42} = [55:58];
mEC_label{42} = 'mEC 42: 4-cycle + 2-clique [4 graphs] Group II (graphs [55:58])';
mEC_core_motifs{42} = '{ [1 2 3 4], [4 5] }';

mEC{43} = [59:60];
mEC_label{43} = 'mEC 43: 4-cycle + 3-cycle [2 graphs] Group II (graphs [59:60])';
mEC_core_motifs{43} = '{ [1 2 3 4], [3 4 5] }';

mEC{44} = [61];
mEC_label{44} = 'mEC 44: two 4-cycles [1 graph] Group II (graph 61)';
mEC_core_motifs{44} = '{ [1 2 3 4], [2 3 4 5] }';

mEC{45} = [62:118];
mEC_label{45} = 'mEC 45: 4-cycu [57 graphs] Group II (graphs [62:118])';
mEC_core_motifs{45} = '{ [1 2 3 4] }';
mEC_notes{45} = 'This class contains 5 graph(s) that have parameter dependent core motifs (# 86   93   97 113 117).';

mEC{46} = [119:125];
mEC_label{46} = 'mEC 46: 4-cycu + sink [7 graphs] Group II (graphs [119:125])';
mEC_core_motifs{46} = '{ [1 2 3 4], [5] }';
mEC_notes{46} = 'This class contains 1 graph(s) that are missing an attractor (# 124). This class contains 1 graph that has parameter dependent core motifs (# 124).';

mEC{47} = [126:129];
mEC_label{47} = 'mEC 47: 4-cycu + 2-clique (v1) [4 graphs] Group II (graphs [126:129])';
mEC_core_motifs{47} = '{ [1 2 3 4], [1 5] }';

mEC{48} = [130:137];
mEC_label{48} = 'mEC 48: 4-cycu + 2-clique (v2) [8 graphs] Group II (graphs [130:137])';
mEC_core_motifs{48} = '{ [1 2 3 4], [3 5] }';
mEC_notes{48} = 'This class contains 2 graph(s) that are missing an attractor (# 133 136). This class contains 2 graph(s) that have parameter dependent core motifs (# 133 136).';

mEC{49} = [138:144];
mEC_label{49} = 'mEC 49: 4-cycu + 2-clique (v3) [7 graphs] Group II (graphs [138:144])';
mEC_core_motifs{49} = '{ [1 2 3 4], [4 5] }';
mEC_notes{49} = 'This class contains 4 graph(s) that are missing an attractor (# 139 142 143 144). This class contains 4 graph(s) that have parameter dependent core motifs (# 139 142 143 144).';

mEC{50} = [145:146];
mEC_label{50} = 'mEC 50: 4-cycu + 3-clique [2 graphs] Group II (graphs [145:146])';
mEC_core_motifs{50} = '{ [1 2 3 4], [2 3 5] }';

mEC{51} = [147:148];
mEC_label{51} = 'mEC 51: 4-cycu + 3-cycle (v1) [2 graphs] Group II (graphs [147:148])';
mEC_core_motifs{51} = '{ [1 2 3 4], [3 4 5] }';
mEC_notes{51} = 'This class contains 1 graph(s) that are missing an attractor (# 148). This class contains 1 graph that has parameter dependent core motifs (# 148).';

mEC{52} = [149:150];
mEC_label{52} = 'mEC 52: 4-cycu + 3-cycle (v2) [2 graphs] Group II (graphs [149:150])';
mEC_core_motifs{52} = '{ [1 2 3 4], [1 4 5] }';

mEC{53} = [151];
mEC_label{53} = 'mEC 53: two 4-cycus (v1) [1 graph] Group II (graph 151)';
mEC_core_motifs{53} = '{ [1 2 3 4], [2 3 4 5] }';

mEC{54} = [152];
mEC_label{54} = 'mEC 54: two 4-cycus (v2) [1 graph] Group II (graph 152)';
mEC_core_motifs{54} = '{ [1 2 3 4], [1 3 4 5] }';

mEC{55} = [153];
mEC_label{55} = 'mEC 55: two 4-cycus (v3) [1 graph] Group II (graph 153)';
mEC_core_motifs{55} = '{ [1 2 3 4], [1 2 3 5] }';

mEC{56} = [154:260];
mEC_label{56} = 'mEC 56: 4-ufd [107 graphs] Group II (graphs [154:260])';
mEC_core_motifs{56} = '{ [1 2 3 4] }';

mEC{57} = [261:271];
mEC_label{57} = 'mEC 57: 4-ufd + sink [11 graphs] Group II (graphs [261:271])';
mEC_core_motifs{57} = '{ [1 2 3 4], [5] }';
mEC_notes{57} = 'This class contains 1 graph(s) that are missing an attractor (# 267).';

mEC{58} = [272:279];
mEC_label{58} = 'mEC 58: 4-ufd + 2-clique (v1) [8 graphs] Group II (graphs [272:279])';
mEC_core_motifs{58} = '{ [1 2 3 4], [1 5] }';
mEC_notes{58} = 'This class contains 2 graph(s) that are missing an attractor (# 276 279).';

mEC{59} = [280:283];
mEC_label{59} = 'mEC 59: 4-ufd + 2-clique (v2) [4 graphs] Group II (graphs [280:283])';
mEC_core_motifs{59} = '{ [1 2 3 4], [2 5] }';

mEC{60} = [284:291];
mEC_label{60} = 'mEC 60: 4-ufd + 2-clique (v3) [8 graphs] Group II (graphs [284:291])';
mEC_core_motifs{60} = '{ [1 2 3 4], [3 5] }';

mEC{61} = [292:307];
mEC_label{61} = 'mEC 61: 4-ufd + 2-clique (v4) [16 graphs] Group II (graphs [292:307])';
mEC_core_motifs{61} = '{ [1 2 3 4], [4 5] }';
mEC_notes{61} = 'This class contains 3 graph(s) that are missing an attractor (# 293 299 305).';

mEC{62} = [308:309];
mEC_label{62} = 'mEC 62: 4-ufd + 3-clique (v1) [2 graphs] Group II (graphs [308:309])';
mEC_core_motifs{62} = '{ [1 2 3 4], [1 2 5] }';

mEC{63} = [310:311];
mEC_label{63} = 'mEC 63: 4-ufd + 3-clique (v2) [2 graphs] Group II (graphs [310:311])';
mEC_core_motifs{63} = '{ [1 2 3 4], [2 3 5] }';

mEC{64} = [312:314];
mEC_label{64} = 'mEC 64: 4-ufd + 3-cycle (v1) [3 graphs] Group II (graphs [312:314])';
mEC_core_motifs{64} = '{ [1 2 3 4], [3 4 5] }';
mEC_notes{64} = 'This class contains 1 graph(s) that are missing an attractor (# 314).';

mEC{65} = [315:317];
mEC_label{65} = 'mEC 65: 4-ufd + 3-cycle (v2) [3 graphs] Group II (graphs [315:317])';
mEC_core_motifs{65} = '{ [1 2 3 4], [1 4 5] }';

mEC{66} = [318];
mEC_label{66} = 'mEC 66: 4-ufd + fusion 3-cycle [1 graph] Group II (graph 318)';
mEC_core_motifs{66} = '{ [1 2 3 4], [1 2 3 5] }';

mEC{67} = [319:320];
mEC_label{67} = 'mEC 67: 4-ufd + 4-cycu (v1) [2 graphs] Group II (graphs [319:320])';
mEC_core_motifs{67} = '{ [1 2 3 4], [2 3 4 5] }';
mEC_notes{67} = 'This class contains 2 graph(s) that are missing an attractor (# 319 320). This class contains 2 graph(s) that have parameter dependent core motifs (# 319 320).';

mEC{68} = [321];
mEC_label{68} = 'mEC 68: 4-ufd + 4-cycu (v2) [1 graph] Group II (graph 321)';
mEC_core_motifs{68} = '{ [1 2 3 4], [1 3 4 5] }';

mEC{69} = [322];
mEC_label{69} = 'mEC 69: 4-ufd + 4-cycu (v3) [1 graph] Group II (graph 322)';
mEC_core_motifs{69} = '{ [1 2 3 4], [1 3 4 5] }';
mEC_notes{69} = 'This class contains 1 graph(s) that are missing an attractor (# 322). This class contains 1 graph that has parameter dependent core motifs (# 322).';

mEC{70} = [323];
mEC_label{70} = 'mEC 70: two 4-ufds (v1) [1 graph] Group II (graph 323)';
mEC_core_motifs{70} = '{ [1 2 3 4], [2 3 4 5] }';

mEC{71} = [324];
mEC_label{71} = 'mEC 71: two 4-ufds (v2) [1 graph] Group II (graph 324)';
mEC_core_motifs{71} = '{ [1 2 3 4], [2 3 4 5] }';

mEC{72} = [325];
mEC_label{72} = 'mEC 72: two 4-ufds (v3) [1 graph] Group II (graph 325)';
mEC_core_motifs{72} = '{ [1 2 3 4], [1 3 4 5] }';

mEC{73} = [326];
mEC_label{73} = 'mEC 73: two 4-ufds (v4) [1 graph] Group II (graph 326)';
mEC_core_motifs{73} = '{ [1 2 3 4], [1 2 4 5] }';

mEC{74} = [327];
mEC_label{74} = 'mEC 74: two 4-ufds (v5) [1 graph] Group II (graph 327)';
mEC_core_motifs{74} = '{ [1 2 3 4], [1 2 3 5] }';

mEC{75} = [328];
mEC_label{75} = 'mEC 75: two 4-ufds (v6) [1 graph] Group II (graph 328)';
mEC_core_motifs{75} = '{ [1 2 3 4], [1 3 4 5] }';
mEC_notes{75} = 'This class contains 1 graph(s) that are missing an attractor (# 328).';

mEC{76} = [329:598];
mEC_label{76} = 'mEC 76: 3-cycle [270 graphs] Group III (graphs [329:598])';
mEC_core_motifs{76} = '{ [1 2 3] }';

mEC{77} = [599:660];
mEC_label{77} = 'mEC 77: 3-cycle + sink [62 graphs] Group III (graphs [599:660])';
mEC_core_motifs{77} = '{ [1 2 3], [4] }';

mEC{78} = [661:664];
mEC_label{78} = 'mEC 78: 3-cycle + two sinks [4 graphs] Group III (graphs [661:664])';
mEC_core_motifs{78} = '{ [1 2 3], [4], [5] }';

mEC{79} = [665:716];
mEC_label{79} = 'mEC 79: 3-cycle + 2-clique (disjoint) [52 graphs] Group III (graphs [665:716])';
mEC_core_motifs{79} = '{ [1 2 3], [4 5] }';

mEC{80} = [717:864];
mEC_label{80} = 'mEC 80: 3-cycle + 2-clique (overlap) [148 graphs] Group III (graphs [717:864])';
mEC_core_motifs{80} = '{ [1 2 3], [3 4] }';

mEC{81} = [865:878];
mEC_label{81} = 'mEC 81: 3-cycle + 2-clique + sink [14 graphs] Group III (graphs [865:878])';
mEC_core_motifs{81} = '{ [1 2 3], [3 4], [5] }';

mEC{82} = [879:881];
mEC_label{82} = 'mEC 82: 3-cycle + two 2-cliques (v1) [3 graphs] Group III (graphs [879:881])';
mEC_core_motifs{82} = '{ [1 2 3], [3 4], [3 5] }';

mEC{83} = [882:895];
mEC_label{83} = 'mEC 83: 3-cycle + two 2-cliques (v2) [14 graphs] Group III (graphs [882:895])';
mEC_core_motifs{83} = '{ [1 2 3], [1 5], [3 4] }';

mEC{84} = [896:907];
mEC_label{84} = 'mEC 84: 3-cycle + two 2-cliques (v3) [12 graphs] Group III (graphs [896:907])';
mEC_core_motifs{84} = '{ [1 2 3], [3 4], [4 5] }';

mEC{85} = [908:909];
mEC_label{85} = 'mEC 85: 3-cycle + three 2-cliques [2 graphs] Group III (graphs [908:909])';
mEC_core_motifs{85} = '{ [1 2 3], [1 5], [3 4], [4 5] }';

mEC{86} = [910:916];
mEC_label{86} = 'mEC 86: 3-cycle + 3-clique [7 graphs] Group III (graphs [910:916])';
mEC_core_motifs{86} = '{ [1 2 3], [3 4 5] }';

mEC{87} = [917:920];
mEC_label{87} = 'mEC 87: two 3-cycles (v1) [4 graphs] Group III (graphs [917:920])';
mEC_core_motifs{87} = '{ [1 2 3], [3 4 5] }';

mEC{88} = [921:961];
mEC_label{88} = 'mEC 88: two 3-cycles (v2, "butterfly") [41 graphs] Group III (graphs [921:961])';
mEC_core_motifs{88} = '{ [1 2 3], [2 3 4] }';

mEC{89} = [962:966];
mEC_label{89} = 'mEC 89: two 3-cycles + sink [5 graphs] Group III (graphs [962:966])';
mEC_core_motifs{89} = '{ [1 2 3], [2 3 4], [5] }';

mEC{90} = [967:972];
mEC_label{90} = 'mEC 90: two 3-cycles + 2-clique (v1) [6 graphs] Group III (graphs [967:972])';
mEC_core_motifs{90} = '{ [1 2 3], [2 3 4], [4 5] }';

mEC{91} = [973:975];
mEC_label{91} = 'mEC 91: two 3-cycles + 2-clique (v2) [3 graphs] Group III (graphs [973:975])';
mEC_core_motifs{91} = '{ [1 2 3], [2 3 4], [2 5] }';

mEC{92} = [976:977];
mEC_label{92} = 'mEC 92: two 3-cycles + 2-clique (v3) [2 graphs] Group III (graphs [976:977])';
mEC_core_motifs{92} = '{ [1 2 3], [2 3 4], [3 5] }';

mEC{93} = [978:979];
mEC_label{93} = 'mEC 93: two 3-cycles + two 2-cliques [2 graphs] Group III (graphs [978:979])';
mEC_core_motifs{93} = '{ [1 2 3], [1 5], [2 3 4], [4 5] }';

mEC{94} = [980];
mEC_label{94} = 'mEC 94: three 3-cycles (v1) [1 graph] Group III (graph 980)';
mEC_core_motifs{94} = '{ [1 2 3], [2 3 4], [2 3 5] }';
mEC_notes{94} = 'The attractors are quasiperiodic for eps = 0.25, delta = 0.5.';

mEC{95} = [981];
mEC_label{95} = 'mEC 95: three 3-cycles (v2) [1 graph] Group III (graph 981)';
mEC_core_motifs{95} = '{ [1 2 3], [2 3 4], [3 4 5] }';

mEC{96} = [982];
mEC_label{96} = 'mEC 96: four 3-cycles [1 graph] Group III (graph 982)';
mEC_core_motifs{96} = '{ [1 2 3], [1 3 5], [2 3 4], [3 4 5] }';
mEC_notes{96} = 'This is baby chaos for eps = 0.25, delta = 0.5.';

mEC{97} = [983:1031];
mEC_label{97} = 'mEC 97: fusion 3-cycle [49 graphs] Group III (graphs [983:1031])';
mEC_core_motifs{97} = '{ [1 2 3 4] }';

mEC{98} = [1032:1037];
mEC_label{98} = 'mEC 98: fusion 3-cycle + sink [6 graphs] Group III (graphs [1032:1037])';
mEC_core_motifs{98} = '{ [1 2 3 4], [5] }';

mEC{99} = [1038:1047];
mEC_label{99} = 'mEC 99: fusion 3-cycle + 2-clique (v1) [10 graphs] Group III (graphs [1038:1047])';
mEC_core_motifs{99} = '{ [1 2 3 4], [1 5] }';

mEC{100} = [1048:1049];
mEC_label{100} = 'mEC 100: fusion 3-cycle + 2-clique (v2) [2 graphs] Group III (graphs [1048:1049])';
mEC_core_motifs{100} = '{ [1 2 3 4], [4 5] }';

mEC{101} = [1050:1051];
mEC_label{101} = 'mEC 101: fusion 3-cycle + 3-clique [2 graphs] Group III (graphs [1050:1051])';
mEC_core_motifs{101} = '{ [1 2 3 4], [3 4 5] }';

mEC{102} = [1052];
mEC_label{102} = 'mEC 102: two fusion 3-cycles (v1) [1 graph] Group III (graph 1052)';
mEC_core_motifs{102} = '{ [1 2 3 4], [1 2 3 5] }';

mEC{103} = [1053];
mEC_label{103} = 'mEC 103: two fusion 3-cycles (v2) [1 graph] Group III (graph 1053)';
mEC_core_motifs{103} = '{ [1 2 3 4], [1 2 4 5] }';

```
mEC{104} = [ 1054 ];
mEC_label{104} = 'mEC 104: 5-clique [1 graph] Group IV (graph 1054)';
mEC_core_motifs{104} = '{ [1  2  3  4  5] }';


mEC{105} = [ 1055:1074 ];
mEC_label{105} = 'mEC 105: 4-clique [20 graphs] Group IV (graphs [1055:1074])';
mEC_core_motifs{105} = '{ [1  2  3  4] }';


mEC{106} = [ 1075:1078 ];
mEC_label{106} = 'mEC 106: 4-clique + sink [4 graphs] Group IV (graphs [1075:1078])';
mEC_core_motifs{106} = '{ [1  2  3  4], [5] }';


mEC{107} = [ 1079:1081 ];
mEC_label{107} = 'mEC 107: 4-clique + 2-clique [3 graphs] Group IV (graphs [1079:1081])';
mEC_core_motifs{107} = '{ [1  2  3  4], [4  5] }';


mEC{108} = [ 1082:1083 ];
mEC_label{108} = 'mEC 108: 4-clique + 3-clique [2 graphs] Group IV (graphs [1082:1083])';
mEC_core_motifs{108} = '{ [1  2  3  4], [3  4  5] }';


mEC{109} = [ 1084 ];
mEC_label{109} = 'mEC 109: two 4-cliques [1 graph] Group IV (graph 1084)';
mEC_core_motifs{109} = '{ [1  2  3  4], [2  3  4  5] }';


mEC{110} = [ 1085:1652 ];
mEC_label{110} = 'mEC 110: 3-clique [568 graphs] Group IV (graphs [1085:1652])';
mEC_core_motifs{110} = '{ [1  2  3] }';


mEC{111} = [ 1653:1779 ];
mEC_label{111} = 'mEC 111: 3-clique + sink [127 graphs] Group IV (graphs [1653:1779])';
mEC_core_motifs{111} = '{ [1  2  3], [4] }';


mEC{112} = [ 1780:1788 ];
mEC_label{112} = 'mEC 112: 3-clique + two sinks [9 graphs] Group IV (graphs [1780:1788])';
mEC_core_motifs{112} = '{ [1  2  3], [4], [5] }';


mEC{113} = [ 1789:1894 ];
mEC_label{113} = 'mEC 113: 3-clique + 2-clique (disjoint) [106 graphs] Group IV (graphs [1789:1894])';
mEC_core_motifs{113} = '{ [1  2  3], [4  5] }';


mEC{114} = [ 1895:2096 ];
mEC_label{114} = 'mEC 114: 3-clique + 2-clique (overlap) [202 graphs] Group IV (graphs [1895:2096])';
mEC_core_motifs{114} = '{ [1  2  3], [3  4] }';


mEC{115} = [ 2097:2115 ];
mEC_label{115} = 'mEC 115: 3-clique + 2-clique + sink [19 graphs] Group IV (graphs [2097:2115])';
mEC_core_motifs{115} = '{ [1  2  3], [3  4], [5] }';


mEC{116} = [ 2116:2119 ];
mEC_label{116} = 'mEC 116: 3-clique + two 2-cliques (v1) [4 graphs] Group IV (graphs [2116:2119])';
mEC_core_motifs{116} = '{ [1  2  3], [3  4], [3  5] }';
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mEC{117} = [2120:2139];
mEC_label{117} = 'mEC 117: 3-clique + two 2-cliques (v2) [20 graphs] Group IV (graphs [2120:2139])';
mEC_core_motifs{117} = '{ [1 2 3], [3 4], [4 5] }';

mEC{118} = [2140:2151];
mEC_label{118} = 'mEC 118: 3-clique + two 2-cliques (v3) [12 graphs] Group IV (graphs [2140:2151])';
mEC_core_motifs{118} = '{ [1 2 3], [1 5], [3 4] }';

mEC{119} = [2152:2154];
mEC_label{119} = 'mEC 119: 3-clique + three 2-cliques [3 graphs] Group IV (graphs [2152:2154])';
mEC_core_motifs{119} = '{ [1 2 3], [1 5], [3 4], [4 5] }';

mEC{120} = [2155:2166];
mEC_label{120} = 'mEC 120: two 3-cliques (v1) [12 graphs] Group IV (graphs [2155:2166])';
mEC_core_motifs{120} = '{ [1 2 3], [3 4 5] }';

mEC{121} = [2167:2221];
mEC_label{121} = 'mEC 121: two 3-cliques (v2) [55 graphs] Group IV (graphs [2167:2221])';
mEC_core_motifs{121} = '{ [1 2 3], [2 3 4] }';

mEC{122} = [2222:2228];
mEC_label{122} = 'mEC 122: two 3-clique + sink [7 graphs] Group IV (graphs [2222:2228])';
mEC_core_motifs{122} = '{ [1 2 3], [2 3 4], [5] }';

mEC{123} = [2229:2232];
mEC_label{123} = 'mEC 123: two 3-cliques + 2-clique (v1) [4 graphs] Group IV (graphs [2229:2232])';
mEC_core_motifs{123} = '{ [1 2 3], [2 3 4], [3 5] }';

mEC{124} = [2233:2238];
mEC_label{124} = 'mEC 124: two 3-cliques + 2-clique (v2) [6 graphs] Group IV (graphs [2233:2238])';
mEC_core_motifs{124} = '{ [1 2 3], [2 3 4], [4 5] }';

mEC{125} = [2239:2240];
mEC_label{125} = 'mEC 125: two 3-cliques + two 2-cliques [2 graphs] Group IV (graphs [2239:2240])';
mEC_core_motifs{125} = '{ [1 2 3], [1 5], [2 3 4], [4 5] }';

mEC{126} = [2241:2242];
mEC_label{126} = 'mEC 126: three 3-cliques (v1) [2 graphs] Group IV (graphs [2241:2242])';
mEC_core_motifs{126} = '{ [1 2 3], [2 3 4], [3 4 5] }';

mEC{127} = [2243];
mEC_label{127} = 'mEC 127: three 3-cliques (v2) [1 graph] Group IV (graph 2243)';
mEC_core_motifs{127} = '{ [1 2 3], [2 3 4], [2 3 5] }';

mEC{128} = [2244];
mEC_label{128} = 'mEC 128: four 3-cliques [1 graph] Group IV (graph 2244)';
mEC_core_motifs{128} = '{ [1 2 3], [1 3 5], [2 3 4], [3 4 5] }';

mEC{129} = [2245:5031];
mEC_label{129} = 'mEC 129: 2-clique [2787 graphs] Group IV (graphs [2245:5031])';
mEC_core_motifs{129} = '{ [1 2] }';

mEC{130} = [5032:6055];
mEC_label{130} = 'mEC 130: 2-clique + sink [1024 graphs] Group IV (graphs [5032:6055])';
mEC_core_motifs{130} = '{ [1 2], [3] }';

mEC{131} = [6056:6161];
mEC_label{131} = 'mEC 131: 2-clique + two sinks [106 graphs] Group IV (graphs [6056:6161])';
mEC_core_motifs{131} = '{ [1 2], [3], [4] }';

mEC{132} = [6162:6167];
mEC_label{132} = 'mEC 132: 2-clique + three sinks [6 graphs] Group IV (graphs [6162:6167])';
mEC_core_motifs{132} = '{ [1 2], [3], [4], [5] }';

mEC{133} = [6168:7046];
mEC_label{133} = 'mEC 133: two 2-cliques (disjoint) [879 graphs] Group IV (graphs [6168:7046])';
mEC_core_motifs{133} = '{ [1 2], [3 4] }';

mEC{134} = [7047:7909];
mEC_label{134} = 'mEC 134: two 2-cliques (overlap) [863 graphs] Group IV (graphs [7047:7909])';
mEC_core_motifs{134} = '{ [1 2], [2 3] }';

mEC{135} = [7910:7994];
mEC_label{135} = 'mEC 135: two 2-cliques (disjoint) + sink [85 graphs] Group IV (graphs [7910:7994])';
mEC_core_motifs{135} = '{ [1 2], [3 4], [5] }';

mEC{136} = [7995:8175];
mEC_label{136} = 'mEC 136: two 2-cliques (overlap) + sink [181 graphs] Group IV (graphs [7995:8175])';
mEC_core_motifs{136} = '{ [1 2], [2 3], [4] }';

mEC{137} = [8176:8186];
mEC_label{137} = 'mEC 137: two 2-cliques (overlap) + two sinks [11 graphs] Group IV (graphs [8176:8186])';
mEC_core_motifs{137} = '{ [1 2], [2 3], [4], [5] }';

mEC{138} = [8187:8338];
mEC_label{138} = 'mEC 138: three 2-cliques (v1) [152 graphs] Group IV (graphs [8187:8338])';
mEC_core_motifs{138} = '{ [1 2], [2 3], [4 5] }';

mEC{139} = [8339:8484];
mEC_label{139} = 'mEC 139: three 2-cliques (v2) [146 graphs] Group IV (graphs [8339:8484])';
mEC_core_motifs{139} = '{ [1 2], [2 3], [3 4] }';

mEC{140} = [8485:8516];
mEC_label{140} = 'mEC 140: three 2-cliques (v3) [32 graphs] Group IV (graphs [8485:8516])';
mEC_core_motifs{140} = '{ [1 2], [2 3], [2 4] }';

mEC{141} = [8517:8530];
mEC_label{141} = 'mEC 141: three 2-cliques + sink (v1) [14 graphs] Group IV (graphs [8517:8530])';
mEC_core_motifs{141} = '{ [1 2], [2 3], [3 4], [5] }';

mEC{142} = [8531:8535];
mEC_label{142} = 'mEC 142: three 2-cliques + sink (v2) [5 graphs] Group IV (graphs [8531:8535])';
mEC_core_motifs{142} = '{ [1 2], [2 3], [2 4], [5] }';

mEC{143} = [8536:8551];
mEC_label{143} = 'mEC 143: four 2-cliques (v1) [16 graphs] Group IV (graphs [8536:8551])';
mEC_core_motifs{143} = '{ [1 2], [2 3], [3 4], [4 5] }';

mEC{144} = [8552:8557];
mEC_label{144} = 'mEC 144: four 2-cliques (v2) [6 graphs] Group IV (graphs [8552:8557])';
mEC_core_motifs{144} = '{ [1 2], [2 3], [2 4], [4 5] }';

mEC{145} = [8558];
mEC_label{145} = 'mEC 145: four 2-cliques (v3) [1 graph] Group IV (graph 8558)';
mEC_core_motifs{145} = '{ [1 2], [2 3], [2 4], [2 5] }';

mEC{146} = [8559:8578];
mEC_label{146} = 'mEC 146: four 2-cliques (v4) [20 graphs] Group IV (graphs [8559:8578])';
mEC_core_motifs{146} = '{ [1 2], [1 4], [2 3], [3 4] }';

mEC{147} = [8579:8581];
mEC_label{147} = 'mEC 147: four 2-cliques + sink [3 graphs] Group IV (graphs [8579:8581])';
mEC_core_motifs{147} = '{ [1 2], [1 4], [2 3], [3 4], [5] }';

mEC{148} = [8582:8584];
mEC_label{148} = 'mEC 148: five 2-cliques (v1) [3 graphs] Group IV (graphs [8582:8584])';
mEC_core_motifs{148} = '{ [1 2], [1 4], [2 3], [3 4], [4 5] }';

mEC{149} = [8585];
mEC_label{149} = 'mEC 149: five 2-cliques (v2) [1 graph] Group IV (graph 8585)';
mEC_core_motifs{149} = '{ [1 2], [1 5], [2 3], [3 4], [4 5] }';

mEC{150} = [8586];
mEC_label{150} = 'mEC 150: six 2-cliques [1 graph] Group IV (graph 8586)';
mEC_core_motifs{150} = '{ [1 2], [1 4], [2 3], [2 5], [3 4], [4 5] }';

mEC{151} = [8587:9350];
mEC_label{151} = 'mEC 151: sink [764 graphs] Group IV (graphs [8587:9350])';
mEC_core_motifs{151} = '{ [1] }';

mEC{152} = [9351:9571];
mEC_label{152} = 'mEC 152: two sinks [221 graphs] Group IV (graphs [9351:9571])';
mEC_core_motifs{152} = '{ [1], [2] }';

mEC{153} = [9572:9603];
mEC_label{153} = 'mEC 153: three sinks [32 graphs] Group IV (graphs [9572:9603])';
mEC_core_motifs{153} = '{ [1], [2], [3] }';

mEC{154} = [9604:9607];
mEC_label{154} = 'mEC 154: four sinks [4 graphs] Group IV (graphs [9604:9607])';
mEC_core_motifs{154} = '{ [1], [2], [3], [4] }';

mEC{155} = [9608];
mEC_label{155} = 'mEC 155: five sinks [1 graph] Group IV (graph 9608)';
mEC_core_motifs{155} = '{ [1], [2], [3], [4], [5] }';

%%
%%%%%%%%%%%%%%%

% mEC_start gives a list of the first graph in each mEC class
mEC_start = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, ...
16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, ...
31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 53, 55, 59, 61, 62, ...
119, 126, 130, 138, 145, 147, 149, 151, 152, 153, 154, 261, 272, 280, 284, ...
292, 308, 310, 312, 315, 318, 319, 321, 322, 323, 324, 325, 326, 327, 328, ...
329, 599, 661, 665, 717, 865, 879, 882, 896, 908, 910, 917, 921, 962, 967, ...
973, 976, 978, 980, 981, 982, 983, 1032, 1038, 1048, 1050, 1052, 1053, 1054, 1055, ...
1075, 1079, 1082, 1084, 1085, 1653, 1780, 1789, 1895, 2097, 2116, 2120, 2140, 2152, 2155, ...
2167, 2222, 2229, 2233, 2239, 2241, 2243, 2244, 2245, 5032, 6056, 6162, 6168, 7047, 7910, ...
7995, 8176, 8187, 8339, 8485, 8517, 8531, 8536, 8552, 8558, 8559, 8579, 8582, 8585, 8586, ...
8587, 9351, 9572, 9604, 9608];

%%
%%%%%%%%%%%%%%%%

% mEC_end gives a list of the last graph in each mEC class
mEC_end = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, ...
16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, ...
31, 32, 33, 34, 35, 36, 37, 38, 39, 52, 54, 58, 60, 61, 118, ...
125, 129, 137, 144, 146, 148, 150, 151, 152, 153, 260, 271, 279, 283, 291, ...
307, 309, 311, 314, 317, 318, 320, 321, 322, 323, 324, 325, 326, 327, 328, ...
598, 660, 664, 716, 864, 878, 881, 895, 907, 909, 916, 920, 961, 966, 972, ...
975, 977, 979, 980, 981, 982, 1031, 1037, 1047, 1049, 1051, 1052, 1053, 1054, 1074, ...
1078, 1081, 1083, 1084, 1652, 1779, 1788, 1894, 2096, 2115, 2119, 2139, 2151, 2154, 2166, ...
2221, 2228, 2232, 2238, 2240, 2242, 2243, 2244, 5031, 6055, 6161, 6167, 7046, 7909, 7994, ...
8175, 8186, 8338, 8484, 8516, 8530, 8535, 8551, 8557, 8558, 8578, 8581, 8584, 8585, 8586, ...
9350, 9571, 9603, 9607, 9608];

%%
%%%%%%%%%%%%%%%

% mECs containing at least one graph that has a core motif with *no* corresponding attractor:
% (there are 14 such mECs)
mECs_missing_att = [46, 48, 49, 51, 57, 58, 61, 64, 66, 67, 68, 69, 74, 75];

% Graphs that have a core motif with *no* corresponding attractor:
% (there are 19 such graphs)
graphs_missing_att = [124, 133, 136, 139, 142, 143, 144, 148, 267, 276, ...
279, 293, 299, 305, 314, 319, 320, 322, 328];

%%
%%%%%%%%%%%%%%%

% mECs containing at least one graph with parameter dependent core motifs:
% (there are 10 such mECs)
mECs_param_dep = [12, 32, 33, 45, 46, 48, 49, 51, 67, 69];

```
% Graphs that have parameter dependent core motifs:
% (there are 19 such graphs)
graphs_param_dep = [ 12, 32, 33, 86, 93, 97, 113, 117, 124, 133, 136, 139, 142, 143, 144,  ...
148, 319, 320, 322 ];

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%

save('n5_mECs.mat', 'mEC', 'mEC_label','mEC_notes', 'mEC_core_motifs', 'mEC_start', 'mEC_end', 'mECs_missing_att',
'graphs_missing_att', 'mECs_param_dep', 'graphs_param_dep')
```