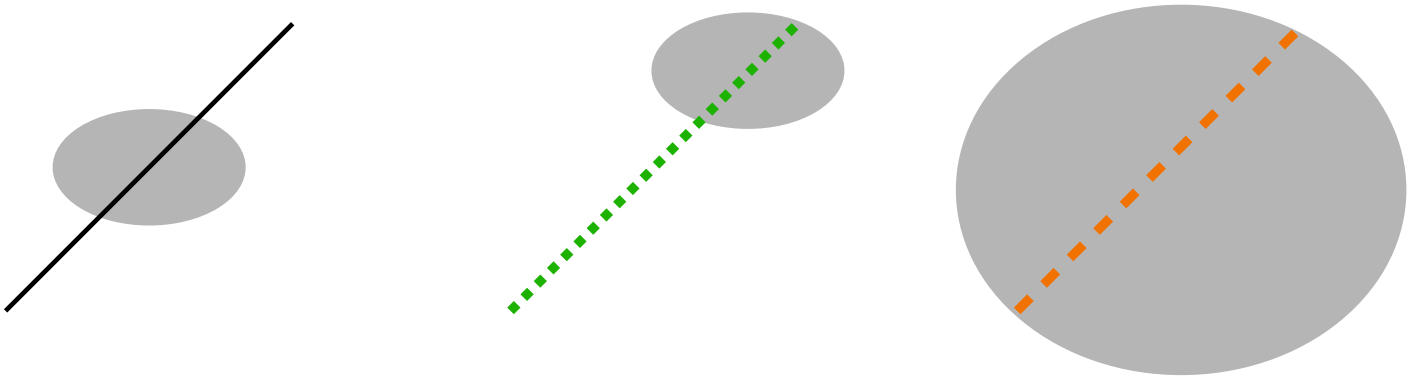
Artifact typology

Third draft

July 2024, simplification crew

Three types of edges:

CONTINUING (C) **ENDING (E)** **SINGLE (S)**



“Continuing”: continues before and after artifact

“Ending”: continues only at one end

“Single”: does not continue

Artifact classification code - reasoning

1. An artifact of **x** nodes can consist of **y** different continuity groups (or “strokes”, aka “ways” from the updated COINS algorithm with 120 degrees angle threshold)

- If planar case: y <= x (there are *at most as many* continuity groups as there are nodes)

- In non planar case: y can be > x; if an artifact is caused by non-planarity —> we don’t touch it at all

2. Interstitial nodes: If 1 < y < x, it means there are continuity groups that are “prime” (touched by an **external** stroke, where we need to keep the entry point) - determine which continuity group this interstitial node lies on, and mark with ‘ (prime)

3. “Touching”: if there are 2 or more Es, we need to check whether these Es end in the same point - if so, mark with a hat ^ or also for S?

4. “Crossing CE”: if there is at least 1 C and at least 1 E, for each E we need to check whether it crosses (or only touches) C. If it crosses C, it gets an asterisk *

Artifact classification - example

We ask the following questions:

1. How many nodes does an artifact have?

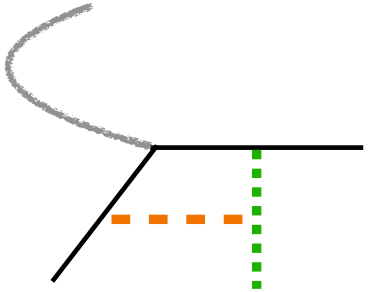
2. How many strokes is it delineated by?

3. Do these strokes continue before and/or after the artifact?

4. Is any of the nodes created by a stroke touching one of the continuity groups?

The answer gives us a code:

`<X-node> <letter code> <apostroph at stroke with interstitial node>`, for example:



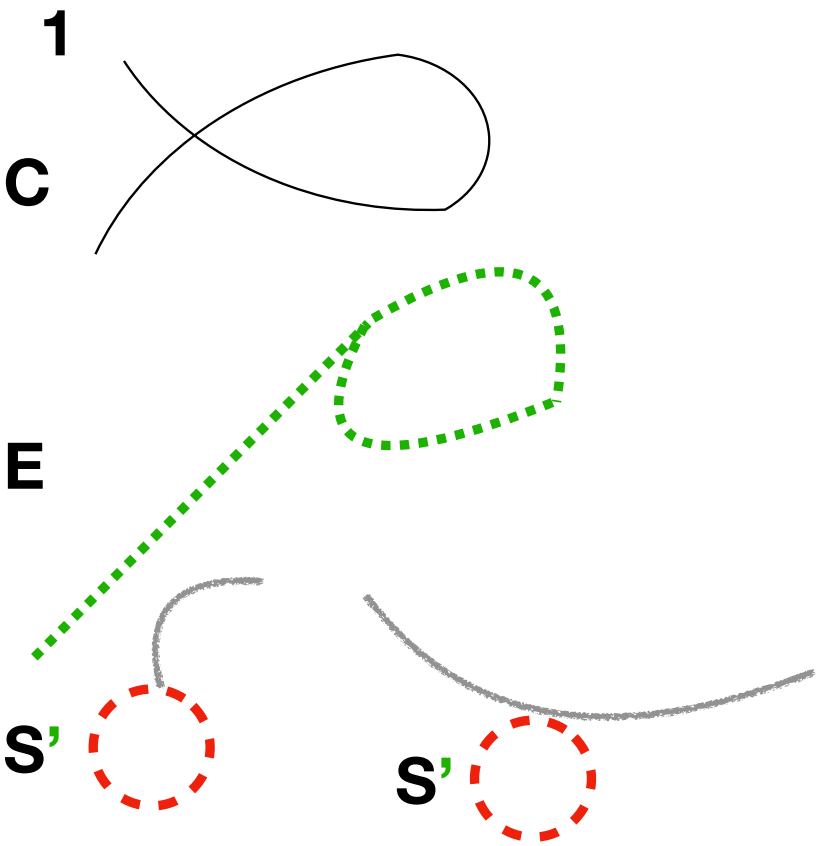
`4-node C'ES`

(This artifact has 4 nodes, is delineated by 3 strokes, of which one is continuous (C), another is ending (E), and the third one is single (S); the 4th node results from a stroke touching C, which is marked by the apostrophe

0-node artifacts

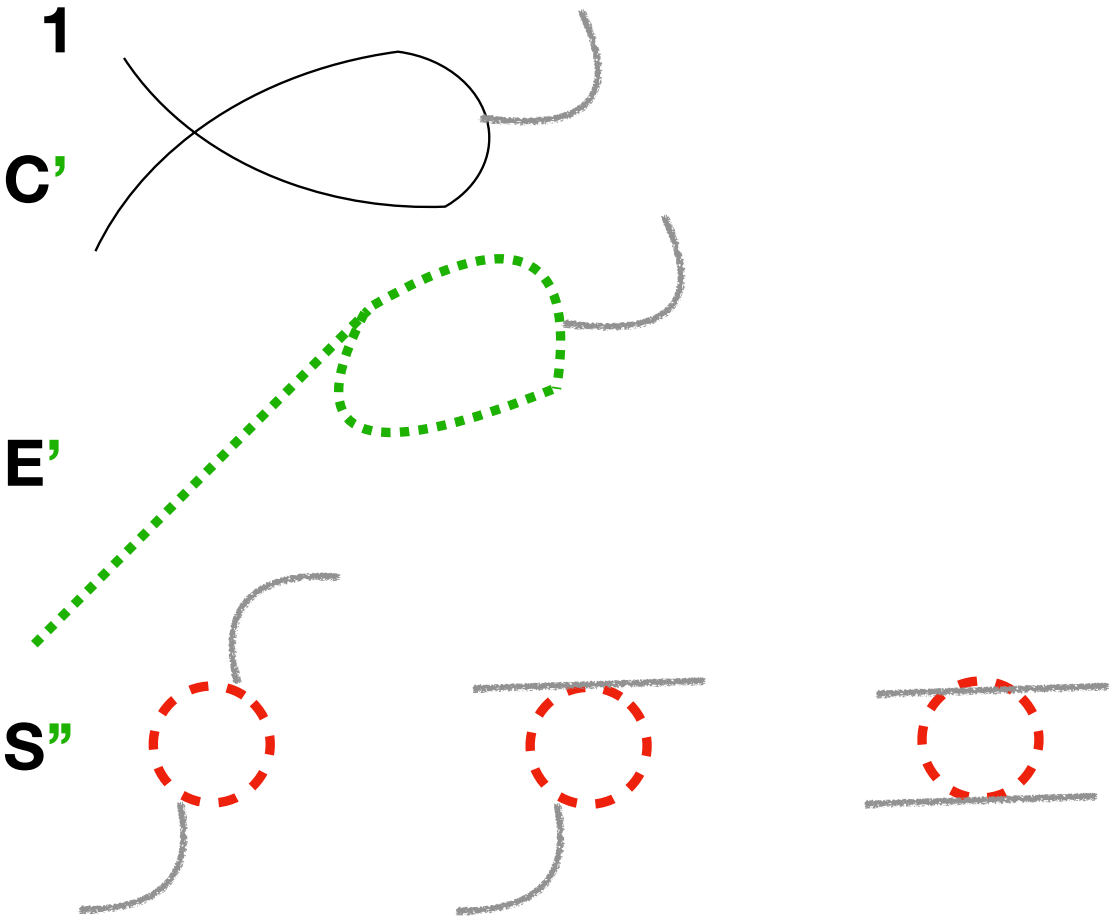
Not touching these - just identifying.
Because they are non-planar by definition

1-node artifacts with 1-continuity

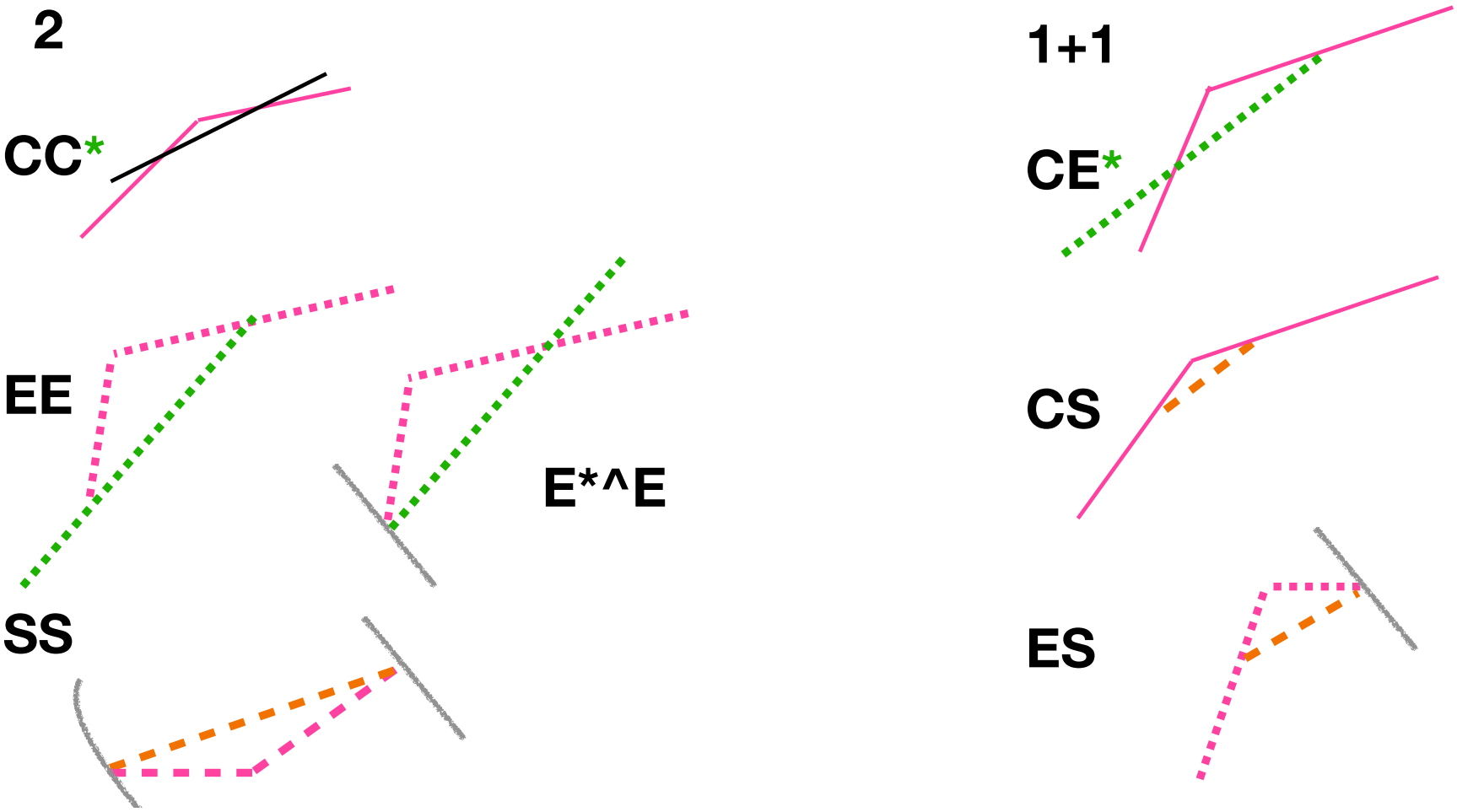


superscripts ‘ * ^ in green
= “by construction”

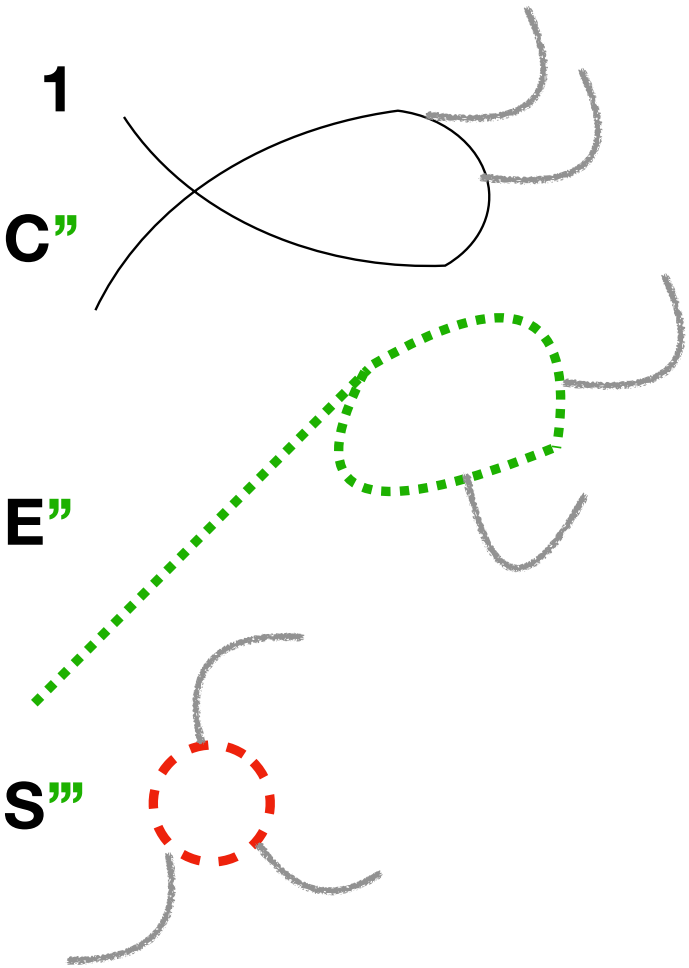
2-node artifacts with 1-continuity



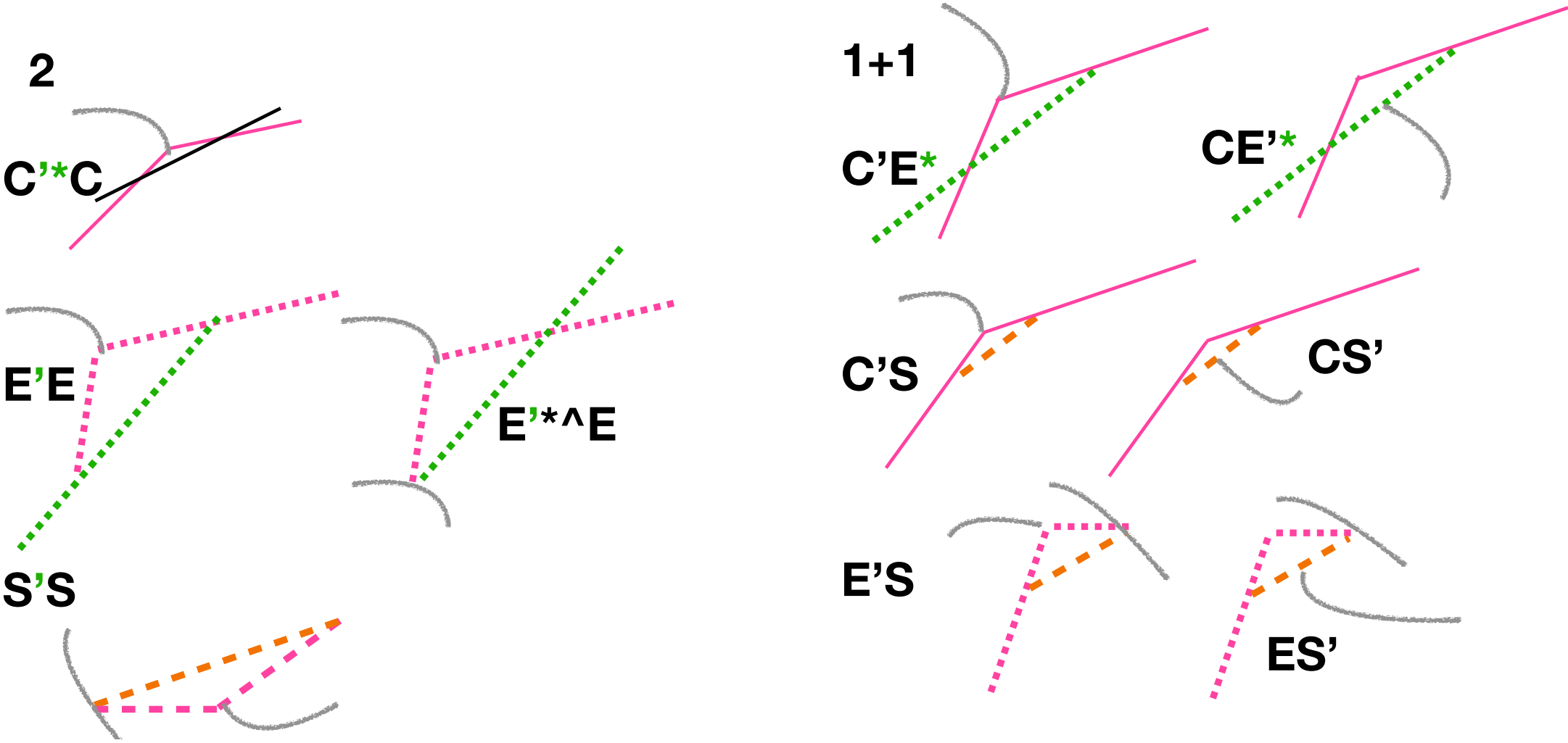
2-node artifacts with 2-continuity



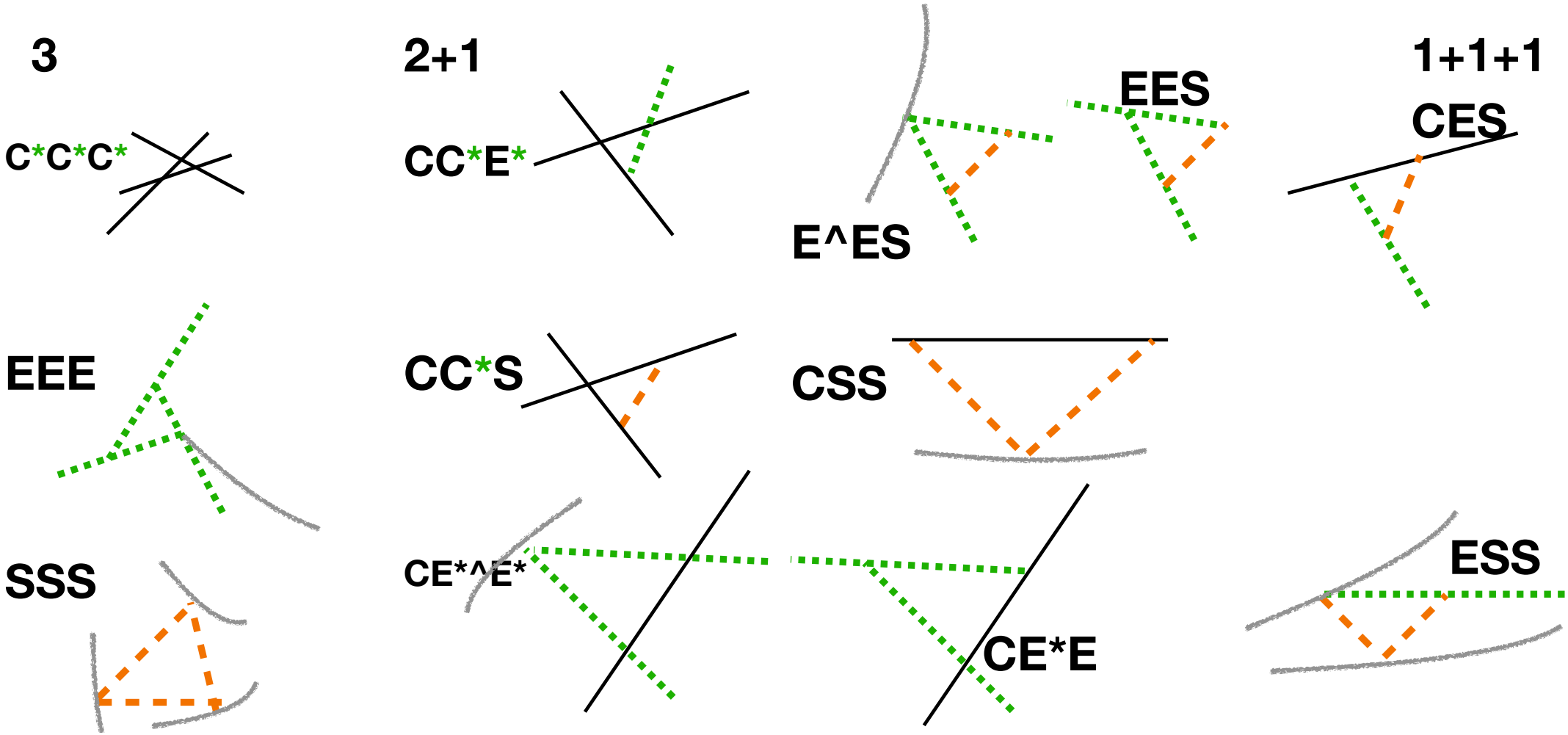
3-node artifacts with 1-continuity



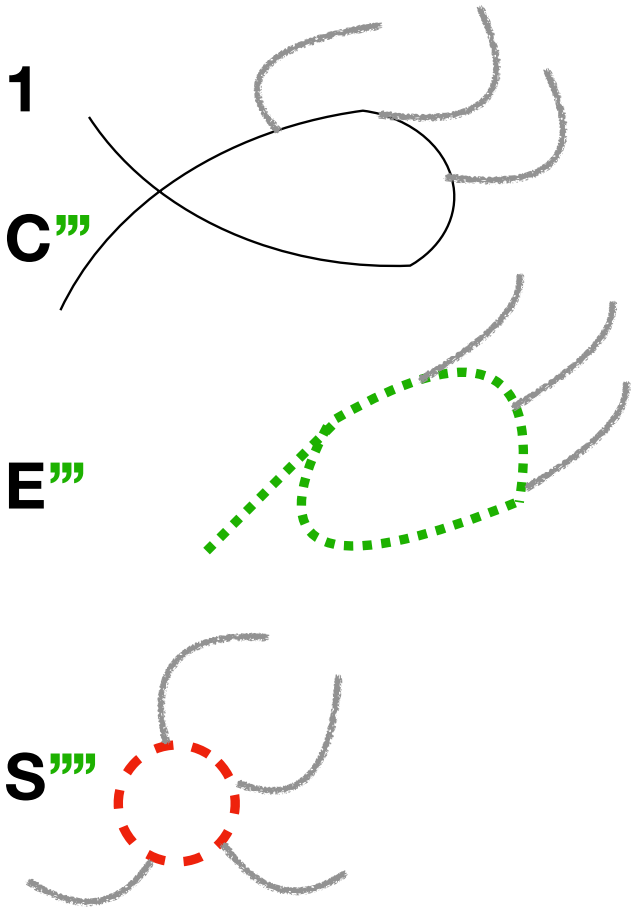
3-node artifacts with 2-continuity



3-node artifacts with 3-continuity



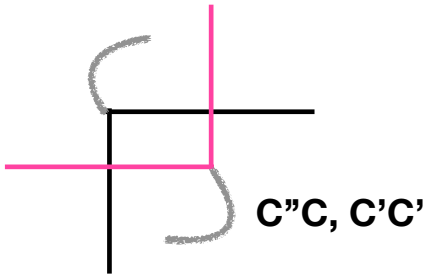
4-node artifacts with 1-continuity



4-node artifacts with 2-continuity

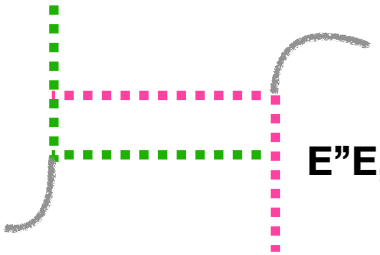
2

CC

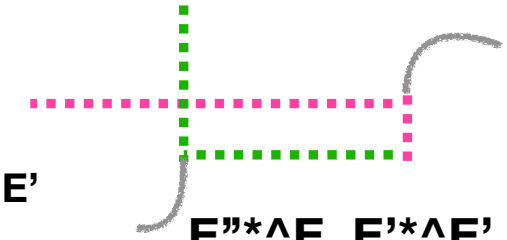


C”C, C’C’

EE

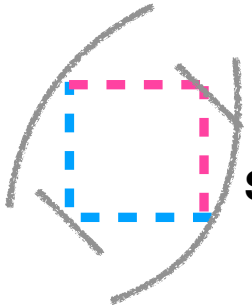


E”E, E’E’



E”*^E, E’*^E’

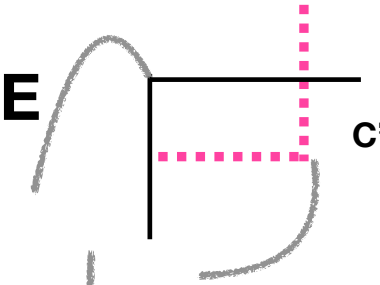
SS



S”S, S’S’

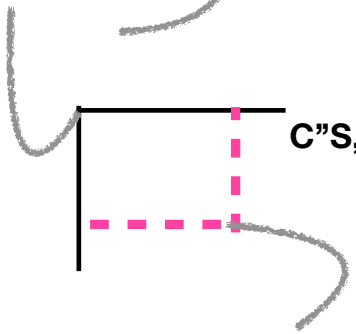
1+1

CE



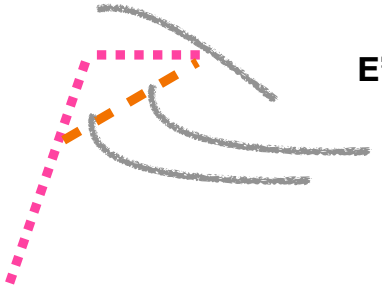
C”E, C’E’, CE”

CS



C”S, C’S’, CS”

ES

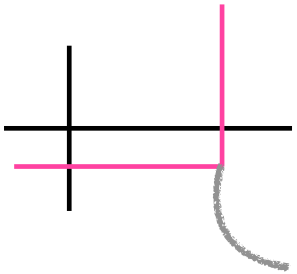


E”S, E’S’, ES”

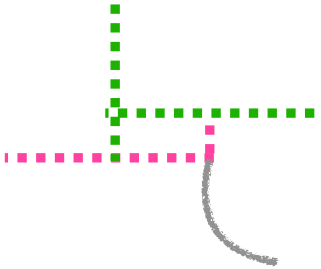
4-node artifacts with 3-continuity, pt 1

3

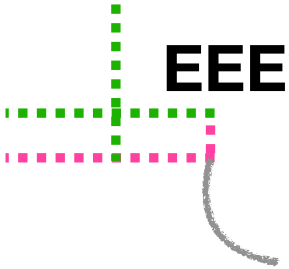
CCC’



EEE’



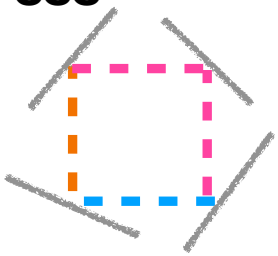
EEE*^’



? Do we care about the crossing

or only about the touching Es

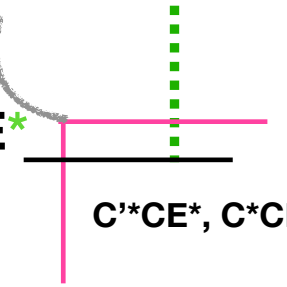
SSS



4-node artifacts with 3-continuity, pt 2

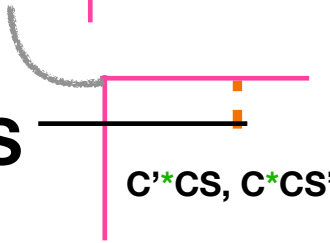
2+1

C'*CE*



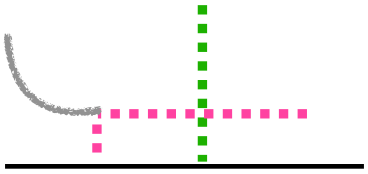
C'*CE*, C*CE'*

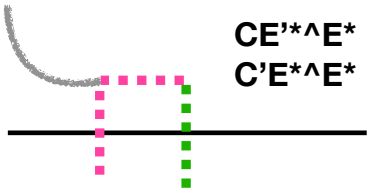
CCS



C'*CS, C*CS'

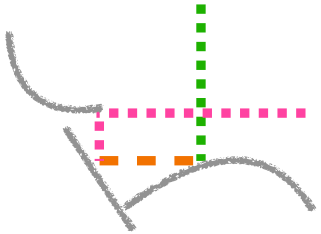
CEE'
C'EE



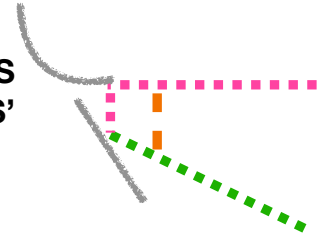


CE'*^E*
C'E*^E*

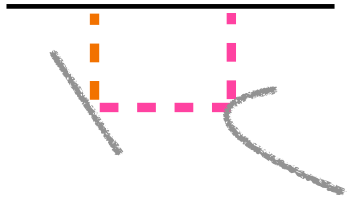
E'ES
EES'



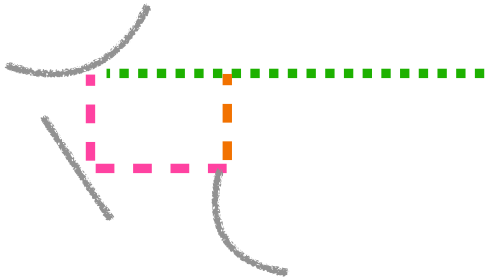
E'^ES
E^ES'



CSS'
C'SS

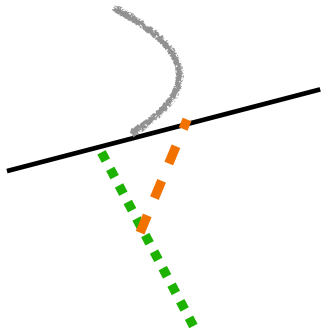


ESS'
E'SS



4-node artifacts with 3-continuity, pt 2

1+1+1

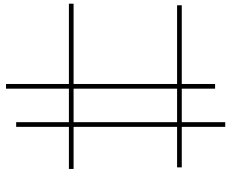


C’ES
CE’S
CES’

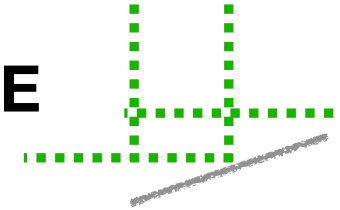
4-node artifacts with 4-continuity, pt 1

4

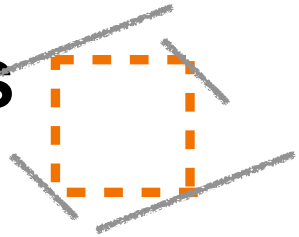
CCCC



EEEE

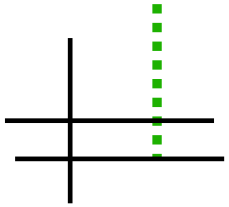


SSSS

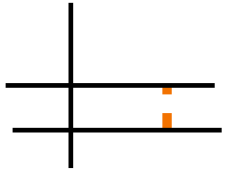


3+1

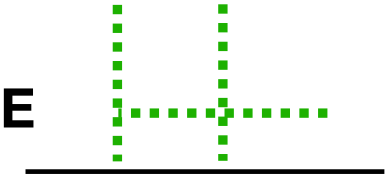
C*C*CE*



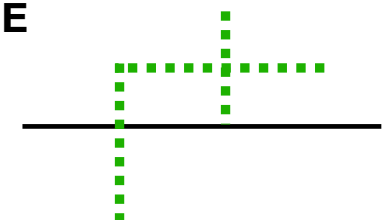
CCCS



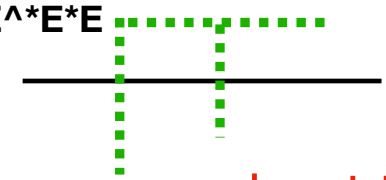
CE*EE



C*E^*EE



C*E^*E*E

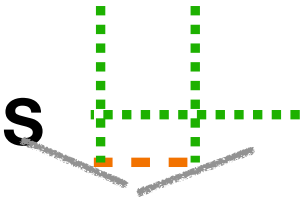


? Do we care about the crossing of EC only, or also about EE?

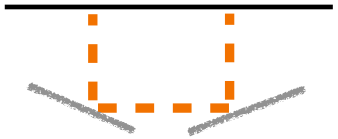
4-node artifacts with 4-continuity, pt 2

3+1

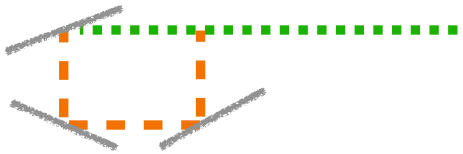
EEES



CSSS



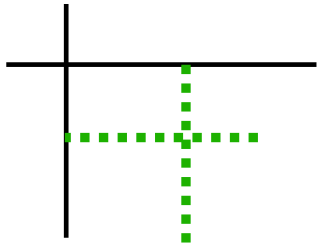
ESSS



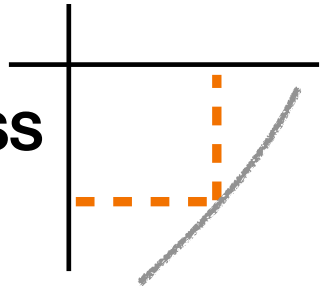
4-node artifacts with 4-continuity, pt 3

2+2

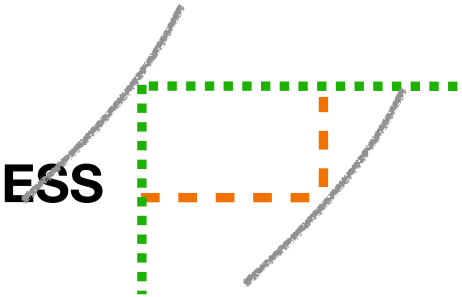
C*CEE



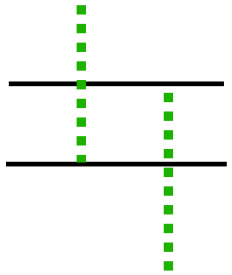
C*CSS



E^ESS

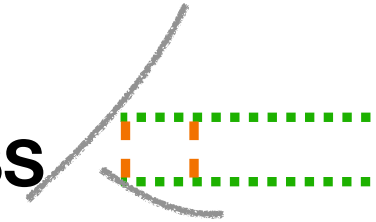


CCE*E*



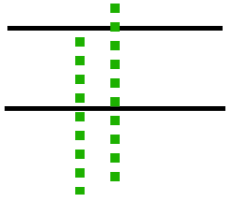
CCSS

EESS



CCE*E

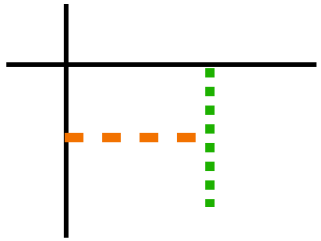
CCE*E



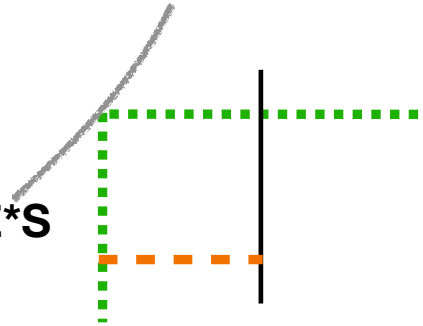
4-node artifacts with 4-continuity, pt 3

2+1+1

C*CES

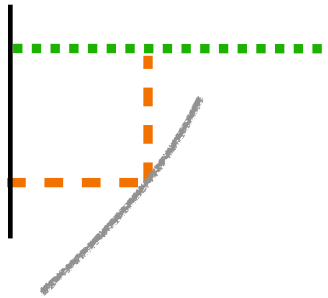


CE^E*S

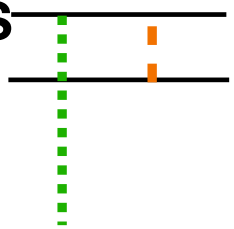


CES^S

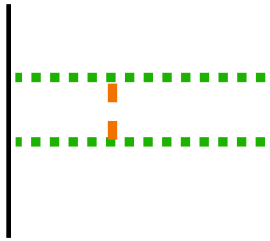
Plus asterisk!



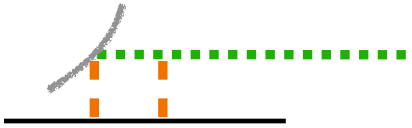
CCE*S



CEES



CESS



? Do we care about the crossing of EC only, or also about EE?

? Do we care about the touching of EE only, or also about SS?