

CAPS Muddy Cards for Sessions 03 and 04

ESP v1.22

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1. Q. Is there something special about the xfoilAIM text or can that be anything? If it is special, where do you find the right text to use for the AIM name? (slide 8 – Session 03)
A. The AIM type strings are listed in the CAPS AIM documentation in the “Currently Available AIMS” section.
2. Q. For the XFOIL aim, do you leave $Re = 0$ to be running it Inviscid? Otherwise, how would you toggle between inviscid or viscous calculations?
A. XFOIL will run a viscous calculation if you set $Re > 0$.
3. Q. Is there a difference between serveCSM and serveESP?
A. serveESP is the new replacement for serveCSM. serveCSM is still provided but should be considered deprecated. serveESP provides a new plugin framework with a range of new extensions (such as pyscript using in this training).
4. Q. When you run XFOIL in CAPS, is there a way add iterations if it fails to converge on the first attempt?
A. Yes. You can increase the xfoil.input.Viscous_Iteration input. This may or may not help xfoil reach a converged viscous solution.
5. Q. When running the Xfoil AIM, if you only used 1 Alpha would the outputs still return in a list of length one, or would they come back as scalar values?
A. It will return a scalar value. The dimensionality is always minimized.
6. Q. Is there a “show geometry” command in pyCAPS?
A. Yes. This is covered in session02. There are capsProblem.geometry.view() and analysis.gemetry.view() methods.
7. Q. If you put a space between the ; and tail on this line “ATTRIBUTE capsIntent \$htail; tail” do you need to put a \$tail?
A. No. If you add a space after the semicolon then the “tail” will be considered a comment and ignored. The CSM language uses spaces to separate arguments, and extra arguments are ignored as comments.
8. Q. Do the AIM Design.Variable names for geometry have to match CSM design parameter names exactly?
A. Yes.
9. Q. Can you please explain in detail how the derivative of drag w.r.t camber calculated?
A. MSES computes the derivative of drag w.r.t. modal (Chebyshev) shape parameters, the msasAIM computes an approximate derivative of the shape modes w.r.t. DESPMTR to complete the chain rule.
10. Q. For calculating derivatives w.r.t ESP parameters, does the ESP run every time?
A. OpenCSM caches a single DESPMTR at a time. Hence, if the geometry is not modified, and only a single DESPMTR is used in the Design.Variable input, then cached derivatives of the geometry w.r.t. DESPTR will be used. Otherwise, the geometric derivatives are re-computed.