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 - critical hydrogen-exhausted core mass is reached
 - main sequence phase terminates
 - core contracts and heats rapidly
 - electrons in core become degenerate, contraction rate slows, electron conductivity controls energy flow, core becomes nearly isothermal
 - subgiant branch evolution between main sequence and red giant branch at nearly constant luminosity, hydrogen burns in narrowing shell, envelope convection extends inward in mass
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 - overall contraction phase ensues
 - hydrogen-exhausted core becomes gravothermally unstable
 - core contracts and heats, envelope expands
 - hydrogen burns in a thick shell until a thermal instability occurs
 - hydrogen burns in narrowing shell
 - envelope convection extends inward in mass

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- overall contraction phase ensues before hydrogen vanishes in the core
- hydrogen vanishes suddenly over a large central region
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- core contracts and heats, envelope expands, model evolves to the red
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