Circular polarization from a native linear receiver

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Circular_{sky} \Rightarrow \text{Native Linear} \Rightarrow Hybrid \Rightarrow \text{Circular}

Mr. Polarization, aka Carl
C band and L band have native linear receivers with hybrids.
Hybrids Convert From Native Linear to Circular

Both have equal amplitudes in both channels, but for circular the channels are offset by 90 degrees.
Benefits/hazards of native linear to circular conversion

• Benefits of converting native linear to circular
  – To mitigate feed rotation with parallactic angle effects
  – Simplification of obtaining VLBI fringes
  – Native linear OMTs have wider bandwidths

• Hazards of converting to circular with a hybrid
  – The hybrid adds noise and phase instabilities
Transmitting circular polarization to C band receiver
RHC and LHC outputs of hybrid viewed on spectrum analyzer
Used network analyzer to measure power ratio: $\frac{P_{LHC}}{P_{RHC}}$
Optimum phase for conversion from linear to circular

optimum ~ 15°
Optimum phase for conversion from linear to circular

optimum \sim 15^\circ
We only use this method for VLBI...

DON’T JUMP!