Study of Homologous Flares from NOAA 10501 on 20 November, 2003

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We present two homologous flares in the active region NOAA AR 10501 on 20 November, 2003, exhibiting four ribbons each. The active region is the return of NOAA AR 10484 and presents a very complex magnetic pattern. A new emerging bipole in the center of the region has a peculiar evolution. The negative polarity breaks in a few pieces and a part of it rotates around the positive polarity, generating an excess of magnetic helicity. That is the site of the flares cores. The evolution of the ribbons suggest that the first eruption is triggered by "tether cutting", whereas the second one is consistent with the "magnetic breakout" model. Using a linear force-free extrapolation of the photospheric magnetic field map the four ribbons have been interpreted as being the footpoints of loop systems during reconnection. The region is well represented by a quadrupolar configuration and the ribbons fit well with the intersections of Quasi-Separatrix Layers with the chromosphere.